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ABSTRACT

The Laboratory Network Program and the National Network of Eisenhower Mathematics and Science Regional Consortia, operating as the Curriculum Frameworks Task Force, jointly convened a group of educators involved in implementing state-level mathematics or science curriculum frameworks (CF). The Hilton Head (South Carolina) conference had a dual purpose: to bring together educators engaged in implementing mathematics and science CFs and CF Task Force members to establish networks and to identify possible areas of technical assistance, and to stimulate interest in the current research effort of the CF Task Force--the development of a multi-state case study exploring CF implementation. Sections of the document include: (1) Session I: Exploring the Meaning of CF Implementation: Translating Policy into Classroom Practice; Establishing a Common Vocabulary for CF Discussion; and Conference Agenda Revisited; (2) Session II: Council of Chief State School Officers (CCSSO) Study of State CFs in Mathematics and Science; (3) Session III: CF Implementation Processes: Experiences from the Field; (4) Session IV: Identification of Barriers to and Facilitators for Implementing CFs; (5) Session V: Assessing the Effectiveness of the CF Implementation Process; (6) Sharing of Resources; (7) Session VI: Four Continua of CF Implementation: Professional Development; Communication; Policy and Politics; and Beliefs, Values, and Vision; (8) Section VII: Regional Sharing; and (9) Conference Evaluation. Appendices include: Agenda; Responses to Follow-up Participant Questionnaire; Suggestions for Facilitating Implementation of a CF: One Group's Perceptions; Brainstorming: Barriers to and Facilitators for CF Implementation; Case Study Design: CF Implementation, State Focus; and Conference Participants. (MKR)

Report of the
Regional Educational Laboratory Network Program and
the National Network of Eisenhower Mathematics and Science Regional Consortia's

Curriculum Framework (CF) Implementation Conference

Hilton Head Island, SC
January 26–27, 1995

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Southwest Educational Development Laboratory, Austin, TX (Curriculum Framework Task Force leader)

High Plains Consortium for Mathematics and Science, Mid-continent Regional Educational Laboratory, Denver, CO

Mid-Atlantic Consortium for Mathematics and Science Education, Research for Better Schools, Philadelphia, PA

Midwest Consortium for Mathematics and Science Education, North Central Regional Educational Laboratory, Oakbrook, IL

Regional Alliance for Mathematics and Science Education Reform, the College Board, New York, NY, and the Regional Laboratory for Educational Improvement of the Northeast and Islands, Andover, MA

SERVE (SouthEastern Regional Vision for Education) Eisenhower Consortium for Mathematics and Science Education, Tallahassee, FL

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Pamela Pritchett, South Carolina State Department of Education, Columbia, SC
Karen Schauer, Galt Joint Unified School District, Galt, CA
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Introduction and Conference Overview

In January 1995, at Hilton Head, SC, the Laboratory Network Program and the National Network of Eisenhower Mathematics and Science Regional Consortia, operating as the Curriculum Frameworks Task Force, jointly convened a group of educators involved in implementing state-level mathematics or science curriculum frameworks (CFs). The Hilton Head conference had a dual purpose:

- to bring together educators engaged in implementing mathematics and science CFs and CF Task Force members to establish networks and identify possible areas of technical assistance, and
- to stimulate interest in the current research effort of the CF Task Force—the development of a multi-state case study exploring CF implementation.

All conference participants came from states that are considering implementation of mathematics or science CFs. Task Force members contacted state-level representatives for names of possible participants. State-level people recommended others in their states with experience in implementing the CFs. Seventy people from 20 states and the District of Columbia attended the conference and represented the following constituencies:[1] The majority (39 percent, or 27 participants) were from state departments of education (representing mathematics, science, curriculum, and assessment divisions), statewide systemic initiatives, or other state-level entities. Twenty-four percent of participants (17) were building administrators and classroom teachers; 21 percent (15) were Task Force members; and16 percent (11) came from intermediate agencies, such as educational service centers or personnel from school district offices.

In interactive sessions (see Appendix A for a copy of the Revised Conference Agenda), participants explored the meaning of CF implementation, identified barriers and facilitators to CF implementation, discussed assessing implementation, shared experiences about implementation, and met with regional representatives to discuss technical assistance options the CF Task Force might provide. In addition, participants interacted with panelists from California, Rhode Island, and South Carolina, states that have already worked through some of the challenges of implementing CFs. They also received a preliminary overview of a study of state mathematics and science CFs being conducted by the Council of Chief State School Officers.[2]

[1]States represented were AL, AR, CA, DE, FL, IN, LA, MA, MI, MS, NC, NE, NJ, NM, NY, OH, PA, RI, SC, and SD. See Appendix F for a list of conference participants.
[2]The full report was subsequently published in May 1995 (see references).

Notes taken by Task Force members, audio recordings, and summary products developed by participants during the conference (e.g., flip chart sheets and sentence strips) were synthesized to form this report, which describes conference sessions chronologically. Rather than relating all conference events and comments, this report tries to capture the essence of the structured conversations for the benefit of those attending the conference as well as others engaged in developing or implementing state mathematics or science CFs. The report will be shared with participants of the Hilton Head Island conference; local, intermediate, and state constituencies involved in developing and implementing CFs; Regional Educational Laboratories (RELs) and Eisenhower Mathematics and Science Regional Consortia not participating in the CF project; and other interested parties.

A follow-up conference evaluation form elicited participant perceptions about each major session. To provide a sense of participant reactions to sessions, pertinent excerpts are presented in the margins and at the ends of some session descriptions. More evaluation information is offered in the final section of this report. In addition, Appendix B contains a complete transcription of all evaluation responses.

Overview of Curriculum Framework (CF) Task Force Products and Activities

In 1992, the ten RELs in the Laboratory Network Program and the Eisenhower Regional Mathematics and Science Consortia pooled knowledge and resources into a formal network of research and development (R&D) institutions. The collaborative effort of these institutions operates primarily through task forces. Led by design teams, each task force follows a basic R&D approach: collecting and analyzing information, developing training materials based on the analyses, and training individuals to use the materials. Three task forces focus on improving mathematics and science teaching: alternative assessment, curriculum framework, and promising practices.

The Curriculum Framework Task Force spent its first year reviewing mathematics and science CFs or documents that most closely resembled frameworks. Two products resulted from this work: an *Analysis Tool,* which provides a means for systematically analyzing the components and structure of CFs, and *A Summary of Analyzed State Curriculum Frameworks,* which compares CFs from across the nation.

Six groups currently participate in the CF effort: the Southwest Educational Development Laboratory (SEDL), which heads the CF Task Force; the High Plains Consortium for Mathematics and Science, Mid-continent Regional Educational Laboratory (McREL); Midwest Consortium for Mathematics and Science Education, North Central Regional Educational Laboratory (NCREL); the Regional Alliance (a consortium of the College Board and the Regional Educational Laboratory of

the Northeast and Islands); Mid-Atlantic Consortium for Mathematics and Science Education, Research for Better Schools (RBS); and SERVE Mathematics and Science Regional Consortium, SouthEastern Regional Vision for Education (SERVE).

Figure 1 shows the states in these regions that are currently implementing CFs and are participating in the CF project, along with their major funding sources.

State	No Federal CF or SSI Funding	U.S. Dept. of Education Eisenhower CF Grant	National Science Foundation SSI Grant
Alabama		√	
Arkansas*		√	√
Colorado	√		
Delaware		√	√
Florida*		√	√
Indiana*	√		
Massachusetts*		√	√
Michigan		√	√
Mississippi	√		
Nebraska*		√	√
New Mexico*			√
New York*		√	√
North Carolina			√
Ohio*			√
Pennsylvania*	√		
South Carolina*			√
South Dakota*			√

*Case study subjects

Figure 1. Funding sources for states in the CF project that are implementing CFs. Sources: U.S. Department of Education World Wide Web (http://www.ed.gov/), August 1995 and *Statewide Systemic Initiatives in Science, Mathematics, and Engineering,* 1993-94, by the National Science Foundation, Arlington, VA.

The CF Task Force currently focuses on three key work areas:

- *Examining the processes by which states develop, revise, and implement state mathematics and science CFs*

  The CF Task Force develops profiles and reports that describe the development, revision, and implementation of state mathematics and science CFs. Of particular interest is the

process of translating state-level policy (as represented by state CFs) into classroom practice. Although many states are developing, revising, or implementing CFs, they differ in funding support, subject area focus, and stages of development or implementation. Two independent research efforts are currently under way—one about developing CFs, the other about implementing CFs. States participating in the case study effort are denoted in Figure 1 by an asterisk. (The criterion differentiating development and implementation is whether or not the authority for implementation states that the implementation process has begun.) The assumption is that each state is somewhere on a continuum from beginning to develop a CF to late stages of implementing one.

- *Enhancing collaborative relationships with state educators engaged in developing, revising, or implementing state mathematics or science CFs*
  To enhance collaboration between the CF Task Force members and state educators working with mathematics or science CFs, four conferences were planned collaboratively by the CF Task Force—two focusing on development and two on implementation. The first CF Development Conference was held at Chelmsford, MA, October 21-22, 1994.[3] A second CF Development Conference was held on April 27-28, 1995, in Denver, CO. The first CF Implementation Conference was held January 26-27, 1995, in Hilton Head, SC, and is the subject of this report.

- *Exploring regional technical assistance options*
  The CF Task Force offers different types and degrees of technical assistance to states, including facilitating CF writing teams or discussions among interested stakeholders, convening state meetings for increasing awareness of the state CF, critiquing draft documents, or assisting in drafting funding proposals.

The first national conference on CFs in mathematics and science (Chelmsford, MA) focused on CF *development*. While the Chelmsford conference focused on states that were developing CFs, the Hilton Head conference was designed to involve states that had completed development of a CF. Several states were included in both of the conferences because they were developing one CF (e.g., science) and implementing the other (e.g., mathematics).

[3]A report of the Chelmsford conference was published in April 1995 and can be obtained from SEDL.

Session I
Exploring the Meaning of CF Implementation

Originally, the opening session was designed to set the stage for discussions of implementation, to establish a common vocabulary for implementation and dissemination strategies, and to share participants' CF activities and roles. The conference began with participants assigned to heterogeneous groups (four to a table) with people who had implemented CFs at state, intermediate, building, or classroom levels. After a lighthearted warm-up activity, participants (grouped with people from outside their state) shared their interpretations of David Cohen's 1991 article, "Revolution in One Classroom."

Part A. Translating Policy into Classroom Practice

Cohen's article follows the efforts of a veteran second-grade teacher (Mrs. Oublier) to align her instruction with the California Mathematics Framework. Cohen was investigating the extent to which Mrs. Oublier's instruction adhered to reform agendas. He observed an "extraordinary melange of traditional and novel approaches to math instruction" (p. 18). For instance, Mrs. Oublier used manipulatives but in a traditional manner. Students were to use beans in a hands-on activity from *Math Their Way*, but, rather than involving them in small-group investigations, the teacher required students to follow her lead and do exactly what she did when she said to do it. Cohen reflected, "It is one thing to embrace a doctrine of instruction and quite another to weave it deeply into one's practice" (p. 19). In another example, Mrs. Oublier had students seated in small groups, and, although "the groups were used in a socially meaningful way . . . there was no mathematical discourse within them," thus negating the practice of cooperative learning (p. 44).

With much concern, Cohen noted a paradox between policy (the CA Framework) and changing practice:

> New instructional policies illuminate deficiencies in teaching and learning and provide impetus for change. From this perspective, teachers are the problem, for it is their mechanical and modest knowledge of mathematics that impedes progress. But teachers also are the chief agents of any new instruction. . .. How can practice be improved if the chief change agents are also the problem to be corrected? . . . When I observed what I report here, there seemed little chance that she [Mrs. Oublier] would be helped to struggle through to a more complex knowledge of mathematics and a more complex practice of teaching mathematics. And if she cannot struggle through, how can she better help her students to do so? The recent reform movement has vastly expanded Mrs. O's obligations in teaching mathematics, without much increasing

> her resources for meeting those obligations. . .. So far, there is little appreciation of how difficult and costly it will be for teachers to learn new practices in which students are competently guided toward deeper understanding. (Cohen, 1991, pp. 46-48)

The heterogeneous groups discussed the following questions in relation to the Cohen article:

- *What dissemination strategies or activities brought Mrs. Oublier to where she was?*
- *What dissemination strategies or activities might have changed the nature of Mrs. Oublier's classroom "revolution" to one more in line with the California Framework and the NCTM standards?*
- *What issues does this case raise?*
- *What implications does this case have for CF implementation?*

Several participants shared notes from these discussions. The consensus was that a workshop on *Math Their Way*, rather than a desire to implement the California CF, had caused Mrs. Oublier to change her instructional approaches.

How could she have changed her approaches (assuming there was sufficient motivation to do so)? One participant offered these suggestions: Mrs. Oublier might have attended conferences or become part of a community of learners that used peer review, observation, or reflective journaling to enhance professional development. She also could have participated in follow-up activities. Another participant noted that, in addition to peer collaboration, Mrs. Oublier might have changed the nature of her "revolution" had she had stronger administrative support and a better understanding of both mathematics content and pedagogy.

The case raised a number of issues, including the following:

What makes a teacher change?
How does one assist teachers in making the leap from what is accepted now to what is needed for the future?
How does money spent on professional development give a return on the dollar?
How much time does it take to instill real change?
How does change move from a single teacher to all teachers in a building?
What are the expectations for teacher change?
What is the difference between CF dissemination and implementation?
What barriers inhibit real change?
How does one assess change?

This case study's implications for CF implementation were then shared with the large group and recorded on overhead transparencies. The responses can be grouped into six categories based on

common threads: plans, professional development, alignment, time and logistics, resources, and support. In addition a final important area was identified—the need to differentiate between the CF document and implementation of a program.

Plans
- —a clearly identified, well-articulated implementation plan
- —long-term building and district-level planning and professional development
- —address content, process, evaluation, and assessment

Professional development
- —capacity building of personnel
- —modeling a constructivist approach
- —teachers educating each other
- —teaching for understanding
- —training in pedagogy and content
- —training to orient clients to the CF
- —disseminating both models and strategies
- —ongoing professional development with follow-up

Alignment
- —assessment and the CF
- —preservice and the CF

Time and Logistics
- —time to facilitate dialogue
- —time for reflection

Resources
- —both top-down and bottom-up activities
- —disbursement of the CF
- —money

Support
- —policy (state and district)
- —community awareness
- —validation of the struggle
- —safe environment
- —shared philosophy or focus
- —discussions at the district level
- —expansion of the circle of stakeholders

One group offered specific suggestions for implementing a CF (see Appendix C). Another group requested that the following information resulting from their discussion be shared:[4]

> The current status of curriculum professional development, expectations, and policies needs to be identified. Both financial and temporal support from the state and district levels are critically needed. Reform (and the need for it) is coming from many camps, some of whose goals are diametrically opposed to each other. Work must be done to bring these viewpoints together. For example, the legislature, which frames the law and mandates development of the CFs and assessments, may have very different goals from those who subscribe to the NCTM point of view.

This group also felt that curriculum implementation at the state level is curriculum development at the local level. Another participant observed, "Our implementation phase is the developmental phase for some people." These statements reflect the linguistic challenges faced by those who implement CFs. As one explained, "We're building a language here."

Part B. Establishing a Common Vocabulary for CF Discussion

Karen Charles of SERVE led a large-group presentation adapted from Activity 5 of *Facilitating Systemic Change in Mathematics and Science Education: A Toolkit for Professional Developers.* The activity was designed to establish a common vocabulary for discussing CF implementation.

Those planning to implement frameworks need to consider various dissemination strategies and various steps along an implementation plan. Two continua—a dissemination continuum and an implementation continuum—require a one-to-one correspondence between them. These continua may help educators understand the role of dissemination in implementation planning. Some ideas discussed were synthesized from the National Science Foundation's *User-Friendly Handbook for Project Dissemination: Science, Mathematics, Engineering and Technology Education.*

The **dissemination continuum** moves across four levels of effort provided by the disseminator: spread, choice, exchange, support. Spread of information involves widespread scattering, is aimed at a large audience, and reaches people randomly. Choice involves providing information, usually in a database, about resources, options, and alternative products and information sources. Exchange implies an originator and a receiver communicating face-to-face. Support includes the developer's provision of ongoing direct assistance to the user.

The implementation continuum moves through stages of results: awareness, understanding, adoption, institutionalization. Awareness involves recognizing an idea or product. Understanding

[4] Slightly paraphrased

involves agreeing with the concept and being willing to move forward with it. Adoption comes from deciding and committing to move ahead, while institutionalization is the continued use of a concept. On each continuum, the journey to implementation is a collaboration between the provider and the user and determines the level of results achieved.

Karen Charles noted that implementation is like pornography: we can't define it, but we know it when we see it. She also stated that implementation is not like a field of dreams. "'Build it and they will come' will not work" for CFs.

Finally, the concept of shifting paradigms was related to the dissemination-implementation process:

Old Paradigm	**New Paradigm**
adoption	adaptation
replication	modification
emphasis on product	emphasis on process
developer-produced	collaboratively produced
expects fidelity	expects innovation
one-shot training	ongoing training

Participants were invited to add to a list of descriptors pertaining to intended results of curriculum documents. Their additions follow:

Old Paradigm	**New Paradigm**
prescribe	describe
deposit	investment
uniformity	flexibility
teaching objectives	student outcomes

[Note: The original conference plan was to have participants construct, at this time, their own continua while sharing information about their state's CF efforts. By this time, however, participants had expressed two concerns: first, discussion time was insufficient to complete meaningful exchanges and, second, the proposed agenda did not meet the needs of participants. In response to the first concern, time for Part A was extended to allow for additional conversation about the Cohen article. In response to the second concern, Task Force members altered the agenda to elicit participant feedback, beginning with the next session.]

Part C: Conference Agenda Revisited

CF Task Force members met in small groups with conference participants to explain the rationale for proposed activities. The assumption was that once the larger picture was clear, participants could make informed decisions about whether or not to continue the agenda as planned. The consensus was to stick with the proposed agenda for the remainder of the day but to consider revisions to the second day's agenda. An evening discussion session was also added to allow for informal exchanges among participants.[5]

Participant Perceptions

Perhaps because of the above concerns, participant perceptions of Session I were mixed. Most of the comments received in the follow-up evaluation (see Conference Evaluation and Appendix B) were positive:

> It was interesting to discuss the article in a group because it forced me to look at what others thought about what implementation meant. Depending on our experiences, various interpretations arose.

Several conference participants, however, noted that the article needed more discussion time. A few felt that discussion of the article did not meet their needs:

> The article was a waste of time and almost an insult to the reader's intelligence.
> Discussion of the article [was the] weakest part of the conference.
> I thought the article was . . . too long and interpreted differently by many.

One participant noted that the discussion was helpful "until the concerns evolved about the remainder of the conference program. I thought this was a premature concern." A comment about Part B: "The concepts involved in spread, choice, exchange, and implementation were timely but could have been expanded upon."

Session II
CCSSO Study of State CFs in Mathematics and Science

Rolf Blank, a researcher at the Council of Chief State School Officers (CCSSO), has been collaborating with the U.S. Department of Education and the National Science Foundation (NSF) to collect data on the status of state mathematics and science CFs. The study provides a snapshot of the status of CFs through August 1994. The completed CCSSO report was published in May 1995. (To receive copies, call the CCSSO at (202) 789-1792). As noted in the Executive Summary,

[5]As a result of modifications to the agenda later that evening, the planned sessions on the CF resource kit and the CF implementation case studies did not take place.

> The purposes of the study were to define and describe state mathematics and science curriculum frameworks, evaluate the role of frameworks in systemic reform, and assist states with development of new frameworks. . .. The study design included three components: (1) a survey of states to identify frameworks and collect information about state context; (2) a content analysis of key elements of frameworks using definitions and categories developed in the study; and (3) a qualitative review of specific aspects of recent frameworks by teams of experts. (Blank and Pechman, May 1995, p. vii)

Rolf Blank at the CF Implementation Conference, Hilton Head Island, SC

Chief state school officers were asked to send copies of their current mathematics and science documents. Some states sent CFs and some sent other types of documents. Out of the 41 mathematics and 42 science CFs sent to the CCSSO, 60 were analyzed. Those included in the study were divided into two categories: those completed after 1990 (40 in all) and those completed before that date.

One pattern that emerged in the analysis was that most states are in the information stage of dissemination and few are in the implementation stage. Of 28 CFs studied in depth, half stated that a central goal was to provide guidance or assistance with standards to schools or districts; 9, to guide local reform; 6, to provide strategies for statewide assessment; and 6, to present higher standards.

In developing CFs most (32 of 60) reported using an expert panel. Others used model documents, such as NCTM Standards or another state's CF (25). Twenty used successive drafts. Teachers were involved in writing portions of 26 CFs. Six states failed to indicate any development activities in their CFs.

Activities and tasks were the most frequent methods of presenting content in CFs, and their use increased noticeably in those CFs produced after 1990. Diagrams and graphics were used by mathematics CFs produced before 1990 and by science, mathematics, and combined CFs produced after 1990. Those CFs that offered some assistance with pedagogical approaches most often used lists or outlines of activities or practices. These lists tended to have little or no detail about how teachers might use the practices in their classrooms.

CFs have not dealt adequately with equity. According to the CCSSO report, Massachusetts is the only state with a framework that addresses equity rigorously and consistently in materials selection, assessment, staff development, teacher preparation, and community involvement. Only 13 out of 60 have instructional strategies spelled out for dealing with issues involving race, ethnicity, or gender.

CFs often recommend links with broad policy categories but rarely have concrete recommendations about specific policy areas. CCSSO believes that links need to be specified in CFs among:

professional development (inservice)
state-level assessment
materials and textbooks
teacher preparation (preservice)
student support services
school governance
technology innovation
facilities
community involvement

While making these connections among policies, a CF is a policy itself, since it is a state-approved and state-implemented document.

Participant Perceptions

While most participants felt the information presented was useful, several expressed concerns pertaining to inaccurate or outdated portrayals of their state's status:

"It is troubling to realize that the information gathered and compiled is not correct."

" It made me realize that there is no way to collect data that is timely and acceptable to all . . . . Maybe we should all accept that communications are not perfect."

A few other concerns included:

"I had hoped for some visionary projections into the future."

"I wonder how valuable the study was because of the difficulty in drawing conclusions about differences in state CFs."

Session III
CF Implementation Processes: Experiences from the Field

Teams from each of three states shared personal experiences pertaining to their involvement in implementing mathematics or science CFs. Panelists were from each level of constituency involved in the conference—state, intermediate, and building or classroom. Each mixed pair gave a 15-minute overview of their project, followed by questions from the audience.

California

Sharing experiences from the Galt Unified School District were Karen Schauer, district curriculum resource teacher, and Jerry Keen, principal. Implementation efforts in Galt, a conservative rural

community south of Sacramento, have combined top-down and bottom-up approaches that have emphasized team building. In bringing together teams of teachers, people from the community, and board members, the district was assisted by the California Science Implementation Network, which offered suggestions for teaching people how to work together and for introducing reform concepts. Children were sent home from school early to provide time for faculty collaboration, planning, and professional development. Teaching consultants from state-level organizations worked with lead teachers to form ongoing support teams. Both site leadership and shared decision making had to be developed.

Support has grown in the community (e.g., among parents, administrators, teachers, and board members). although some mistrust still lingers. A state assessment system (CLAS), which had been tied to frameworks and national standards and which used alternative assessments, was defeated by a small but vocal opposition. Inadequate parent engagement contributed to the defeat of this system. With carefully cultivated support of parents and others in the community, Galt schools continue to use assessments like those of CLAS. Districts and states must engage the public in dialogue about national reform documents and methods.

South Carolina

Relating stories from South Carolina were Pamela Pritchett, special assistant in curriculum development for the state department of education, and Fannie Simmons, building mathematics specialist. About four years ago the South Carolina state superintendent set a goal of improving education to help end the state's more than 30 percent dropout rate. CFs were seen as an important part of the approach because they enabled educators to make clear what was expected of students.

The South Carolina CF project ran into many frustrations, chief among them being that "everything had to happen at the same time," according to Pritchett. In addition, the state legislature and the public were leery of the frameworks and did not understand their rationale. Newspaper reporters in the state did not understand what reform was really about and thus were not supportive of the effort in their reporting. Resources and leadership were not sufficient to move reform on the numerous fronts it faced.

The state SSI set up 13 mathematics and science hubs to support district-level reform. Personnel at the hubs work with administrators in reviewing model lessons and identifying supports that teachers need. In addition, at the hubs teacher leaders who have modeled the standards are identified, and Family Math and Family Science are employed to help involve parents in the process. The teacher leaders review model lessons, identify effective practices, create their own professional development plans, and work toward delivering technical assistance and professional development in their own districts. These professional development plans focus on what a classroom that is implementing the

CFs should look like. Model lessons, teacher support, technology, workshops, written rubrics, and inclusion are some of the items covered. A difficulty at the district level is convincing teachers that change is needed.

Rhode Island

Betty Angelotti, fourth-grade teacher, and Arlene Iannazzi, district mathematics specialist, presented Rhode Island's story. After losing its SSI funding from the NSF, the state continued to fund the CF development work. A draft of the mathematics CF required 18 months to complete. The state is also nearing completion of an assessment piece to match the framework. According to Iannazzi, "assessment is going to change the way we teach" and will drive the CF.

Five regions have used teams of regional educators, board members, businesspeople, parents, and others to develop local CFs based on the state's work. In some areas, the CF has been used as a guidebook or cookbook because educators in the state are all looking at what they are supposed to be doing in different ways. Fiscal problems have presented extreme barriers. The state's inservice days, for instance, were recently cut from ten to two. How could the system be changed to support teacher experimentation? The question remains.

Session IV
Identification of Barriers to and Facilitators for Implementing CFs

This activity provided an opportunity for participants, in role-alike groups, to discuss the potential barriers to and facilitators for, the process of implementing CFs. Separate intermediate, and building or classroom groups were facilitated by panelists, one of whom was a district representative, the other a classroom teacher. Two state groups met— one was facilitated by a panelist assisted by a Task Force member, the other by two Task Force members.

Identification of Categories

Groups first brainstormed responses to the following question:

> *In gaining acceptance for new CFs, what are some broad-based areas of resistance that may need to be overcome (e.g., governing policy, organizational structure, money, people)?*

After generating word lists in the brainstorming sessions (see Appendix D), each role-alike group came to consensus on broad categories of concern and then voted on the two or three categories of greatest concern. Subgroups then developed separate lists of barriers and facilitators to CF implementation for each category. For instance, the building and classroom group was divided into four subgroups. One addressed resource barriers to CF implementation, while another listed resource

facilitators to CF implementation; the third and fourth groups did the same for professional development.

The role-alike groups (in parentheses) identified the following categories:

communications (building or classroom, and state groups)
professional development (building or classroom, and state groups)
resources (building or classroom, and intermediate groups)
beliefs and values (intermediate and state groups)
policy (intermediate group)
political stability (state group)

[Note: Four of these categories subsequently served as discussion topics in Session VI.]

Teachers and administrators discussing barriers to and facilitators for implementing CFs

Identification of Barriers and Facilitators

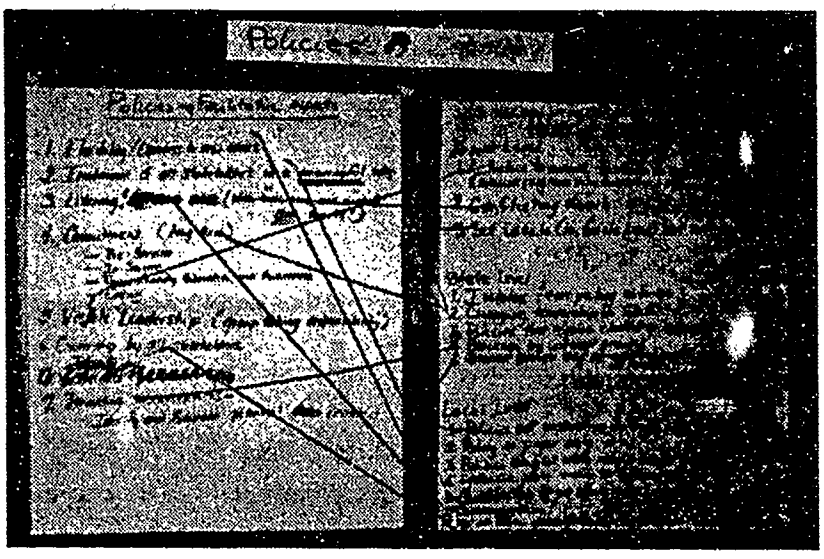
Pairs of same-category charts were posted so barriers and facilitators for a single category were side by side. The two groups working on that category then merged, and, using yarn and tape, matched facilitators with barriers. If no match was present, the group used a different colored marker to add to the list as needed. Figures 2, 3, 4, and 5 depict the charts and links developed by the groups. Figures 2a (Policy), 2b (Resources), 2c (Professional Development), and 3 (Political Stability) all emerged from groups of state-level participants. Figure 4 (Beliefs and Values) was developed by regional and district-level participants and Figures 5a (Professional Development) and 5b (Resources) portray perceptions of classroom teachers and building administrators. Not all groups completed the assigned task. For instance, groups that developed Figures 4 and 5 listed barriers and facilitators but made no attempt to link them.

A team identifies resource barriers to implementing CFs

Another team identifies resource facilitators for implementing CFs

Two teams focusing on beliefs and values combine their efforts, linking barriers to and facilitators for implementing CFs

A team focusing on resources links barriers to and facilitators for implementing CFs



The finished product from a team focusing on policy, showing links between barriers to and facilitators for implementing CFs

The finished product from a team focusing on beliefs and values, showing links between barriers to and facilitators for implementing CFs

Policy Barriers

Federal Level

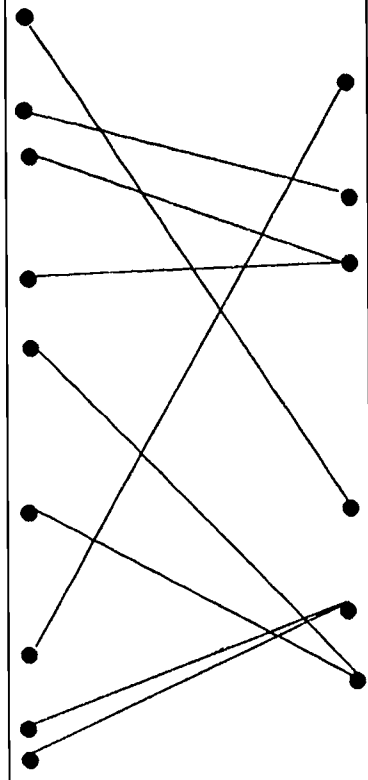
1. Activities to award funding for special programs (special programs may hinder new reforms [i.e., Chapter 1])
2. Conflicting views
3. Set ideals (i.e., Goals 2000) but not enough funds

State Level

1. Isolated and competing reforms
2. Changing leadership in SDE
3. Policies that require elected or appointed officials
4. Blockage by interest groups
5. Blanket policies may not address or recognize specific needs

Local Level

1. Policies not understood in same way at all levels
2. Policy on paper only
3. Policies conflict with reform ideas
4. Systematic plan lacking to address policies
5. Coordination of all levels— policy, reform, implementation
6. Communication
7. Not all believe in new policies - had no input, now it's in place
8. Parent opposition
9. Demographics do not back policies



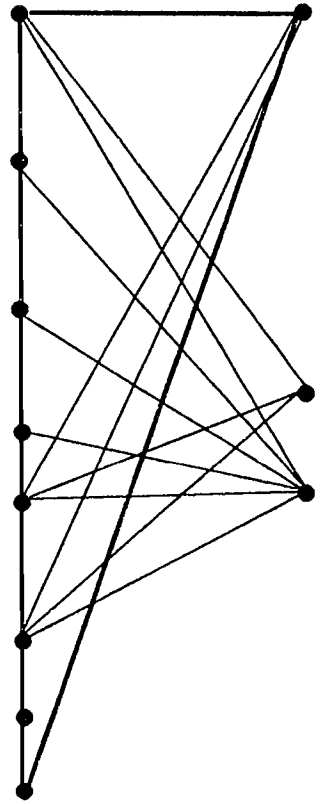
Policy Facilitators

1. Flexibility/openness to new ideas
2. Involvement of all stakeholders in a meaningful way
3. Listening (with eyes, ears, minds, and hearts!)
4. Commitment (long-term)
   - -Preservice
   - -Inservice
   - -Parent/family education and awareness funding
5. Visible leadership (group taking responsibility)
6. Ownership by all stakeholders
7. Preventing misconceptions—identify and educate potential resistors

Figure 2a. Policy barriers to and facilitators for CF implementation: Perceptions of state representatives

Resource Barriers

1. Lack of time (quality)
   - inappropriate use of time
   - after school–teachers burned out
2. Teacher preparation to deal with this change
   - higher education (preservice)
   - inservice
3. Lack appropriate instructional materials/ equipment/space
   - consumables
4. Lack of models and modeling
5. Current professional development models
   - one-shot attempts
   - lack of follow-up/support (ongoing)
6. Funding mechanisms
7. Lack of coordination across initiatives/agencies
8. Non-utilization of non-traditional resources (business, community agencies, media, parents)



Resource Facilitators

Human/People	Service providers (agencies, departments, centers) Business partnerships Professional associations (NSTA, NCTM) PTOs Policymakers
Time	Flextime Policy changes (Carnegie units)
Material Money Equipment Instructional Material Technologies Facilities	Grants (competitve or entailment) Planning for selection, aquisition, maintenance, and use in instruction, assessment, overall improved performance School boards, taxpayers, business partners Planning for change

Figure 2b. Resource barriers to and facilitators for CF implementation: Perceptions of state representatives

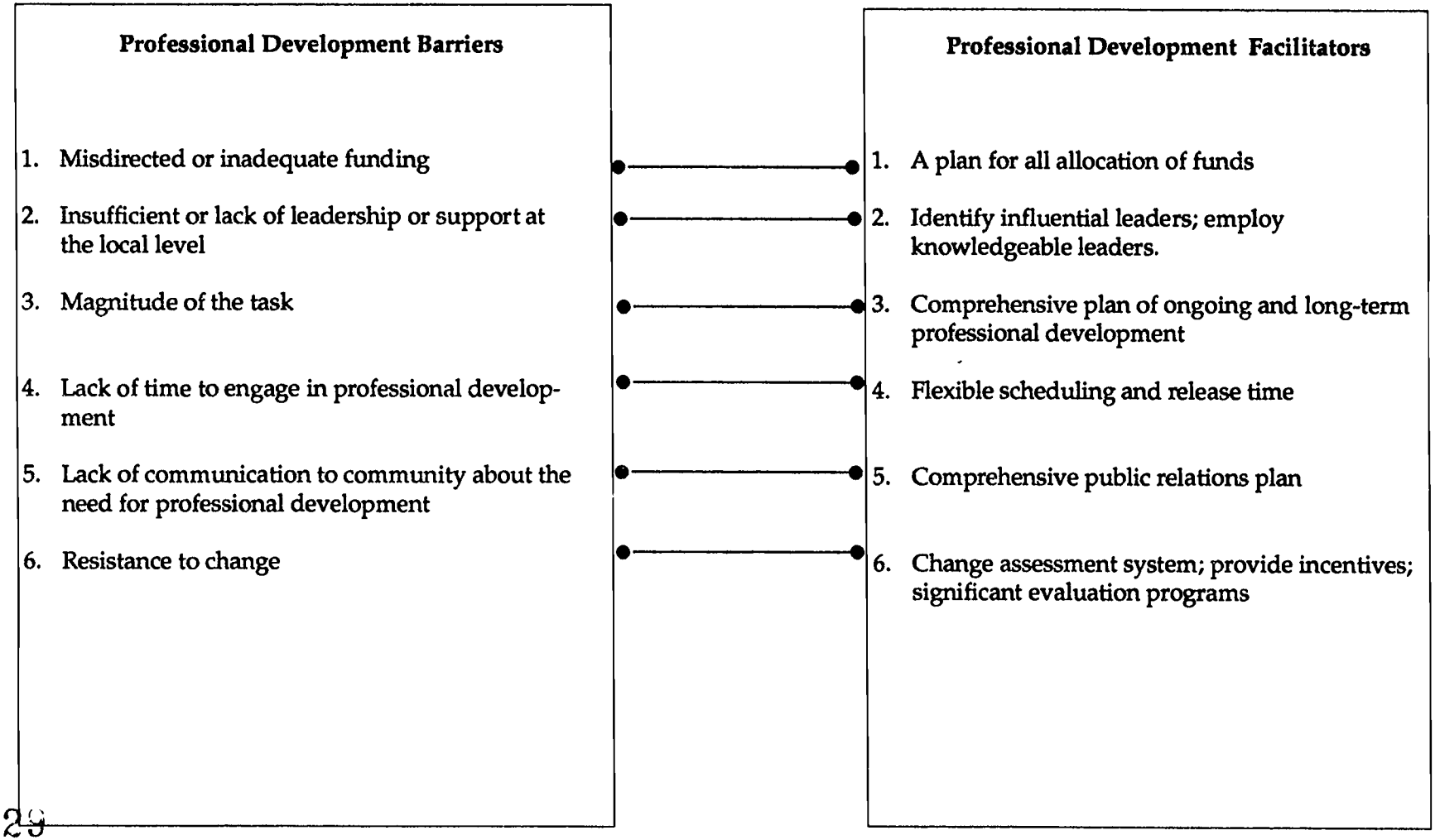


Figure 2c. Professional development barriers to and facilitators for CF implementation: Perceptions of state representatives

Political Stability Barriers

Changing direction (what)

Downsizing (who)

Accountability (where)

Nationally

Back to
"old basics"
"new basics"

Political Stability Facilitators

Compromise/consensus

Build understanding

Enlist support of public (especially business and parents)

Figure 3. Political stability barriers to and facilitators for CF implementation: Perceptions of state representatives

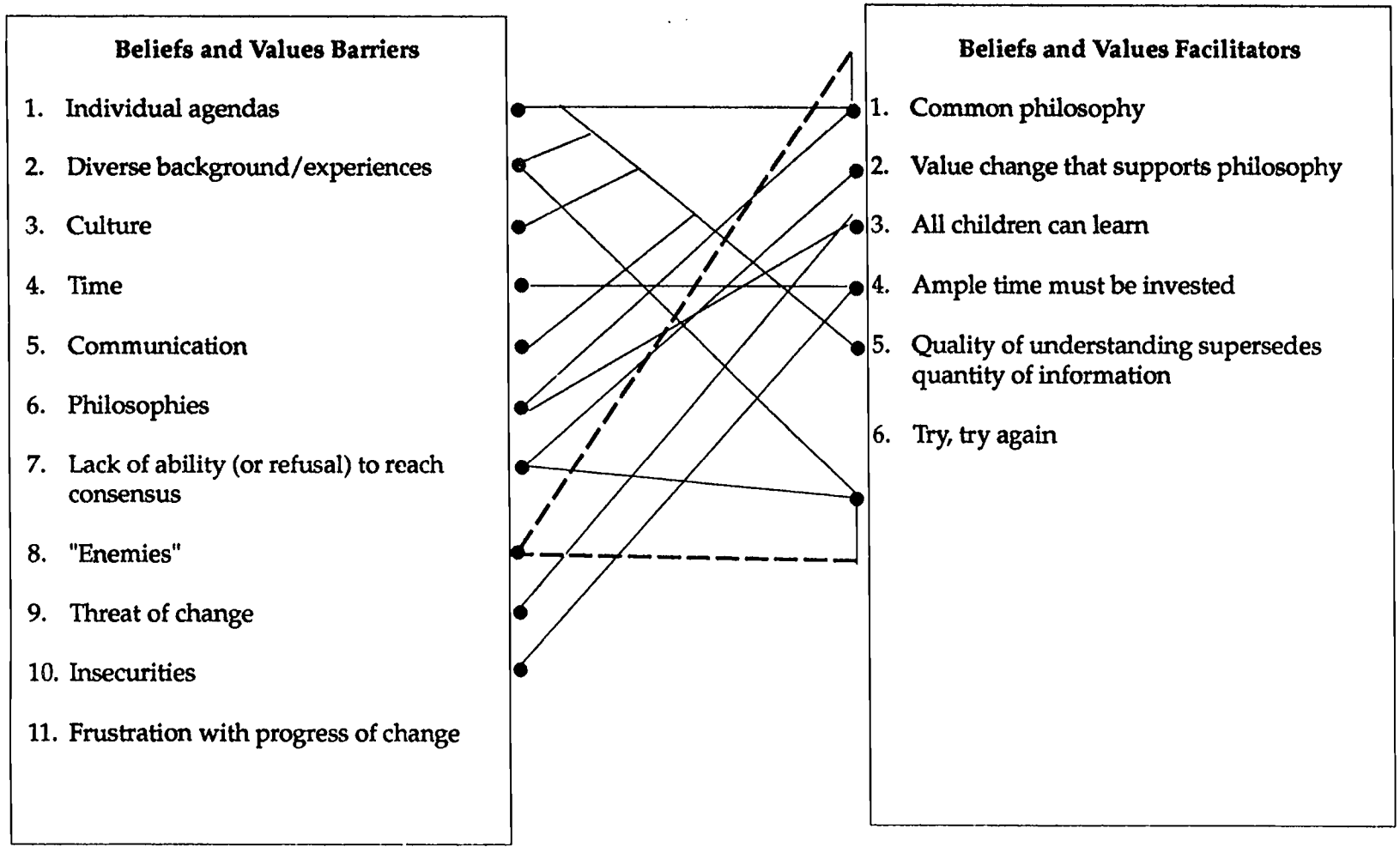


Figure 4. Beliefs and values barriers to and facilitators for CF implementation: Perceptions of regional and district representatives

Professional Development Barriers

Lack of . . .

Language interpretation

Time
- Implementation
- Compensation

Shared vision–all stakeholders

Targeting an audience

Support
- Monetary
- Training/staff development
- Administrative
- Transition
- Higher education
- Site-based

Lack of teacher empowerment (personal strength and stick-to-itive-ness)

Professional Development Facilitators

- Assessment/information
- Understanding the change process
- Teacher inservice

- Involvement of administration

- Resources (time, funds, materials, human involvement)
- Outside agencies (to work with teachers on taking initiative)

Policy

Equity in all of the above (access, process, distribution)

Figure 5a. Professional development barriers to and facilitators for CF implementation: Perceptions of classroom teachers and building administrators

Resource Barriers

Lack of money
- Taxpayers
- Government/political
- For technology

Lack of time
- Traditional school schedule
- Common planning
- Optimal quality time

Geographic limitations

Resource Facilitators

Other states in the process of implementation

Grants (SSI)

Regional labs

Professional organizations

Process of systemic change

Framework efforts/all levels

NCTM standards/Goals 2000

Business community

Restructuring of schoolday calendar

Current research in learning theory (literacy)

Technology (e.g., Internet, computers, calculators, other electronic media)

Colleges/universities

Figure 5b. Resource barriers to and facilitators for CF implementation: Perceptions of building administrators and classroom teachers

Categories with no barrier and facilitator matches indicate possibilities for technical support and assistance by CF Task Force members, since the presence of barriers often means something is lacking.

Two groups discussed barriers and facilitators that resources pose to CF implementation (Figures 2b and 5b). Both the building/classroom group and one state group identified lack of time as a resource barrier, but both concurred that professional organizations, grants, association with businesses, and use of technology could facilitate CF implementation. Two groups also focused on professional development. Again, the building/classroom group and one state group identified time as a resource barrier to CF implementation but agreed that support was another barrier. They both stated that professional development and assessment could facilitate CF implementation.

Terms that tended to be repeated across groups and across categories are listed in Figure 6.

Category	Number of Groups (out of 7) Designating Category as a Barrier	Number of Groups (out of 7) Designating Category as a Facilitator
Time	5	4
Communication	4	2
Money (inadequate or misdirected)	2	2
Leadership	0	4
Systemic plan or shared vision	3	3
Professional development	2	2
Association with business or other community group	2	5

Figure 6. Categories repeated across groups during discussion of facilitators and barriers to CF efforts

Regardless of the category or group, time was most often seen as both a barrier and a facilitator to implementing CFs. Business and community groups, while not perceived as a barrier by any group, were cited by five different groups as a facilitator to CF implementation.

Concerns/Insights

As a final task, category teams itemized one or more concerns or insights about the category that might benefit them or someone else dealing with the same issue. Only the intermediate group completed this task. Their list follows:

Areas of concern related to beliefs:

- awareness
- respect
- persistence
- compassion
- patience
- understanding
- savvy

Insights pertaining to policies:

- Involve all stakeholders in a meaningful way from the beginning!
- Policies at all levels need to be coordinated.
- Policies are powerless without people and pennies.
- A gram of prevention is worth a kilogram of cure.
- Policies happen!

Insights pertaining to resources:

- Barriers have answers. Don't ask why not. Do ask how to.
- All roads lead to policymakers.
- Re-think in new ways. Don't keep dancing the same dance (dance of anger).

Participant Perceptions

Although this activity worked very well for some participants, many seemed to find it confusing or confining. As one participant noted, "I would like to have had more opportunity to share, particularly to hear what other states are doing. Some of this emerged in this session, but often we were too involved in the task." Another observed, "We thought the activity would have been more effective if the barrier and facilitator groups worked together."

Session V
Assessing the Effectiveness of the CF Implementation Process

State teams read the following Mountain View Scenario and discussed a coordinated response to the questions. This response was used to examine an existing plan or formulate a new plan to assess effectiveness of their state's CF implementation process.

Mountain View Scenario

Welcome to Mountain View. This school district is engaged in some innovative systemic reform efforts which originated with a small but vocal group of middle school mathematics teachers. They had learned of the *Standards* at a Regional NCTM Conference and decided to try some of the suggested approaches in their own classrooms. In response to interest by other teachers, this group gained attention and administrative support to present workshops on these instructional strategies (e.g., cooperative problem solving, higher level thinking, writing in mathematics), first within their own school, then for teachers throughout the district.

When the state convened a committee to draft a proposal for an Eisenhower CF grant, Mountain View teachers and administrators were invited to participate. The grant was successful and a steering committee consisting of elementary, secondary, and post-secondary educators, state department of education personnel, parents, and business representatives was convened to develop a plan for writing and field-testing a CF. A draft of an integrated mathematics/science CF was developed and Mountain View was selected as a field review site for the CF.

In order to inform parents and the community of changes in instructional approaches recommended by the CF, the district held a town meeting. Both teachers and administrators were available to respond to questions. The meeting proceeded without incident. However, three weeks later, a full-page spread appeared in the local newspaper, depicting a steady decline in standardized mathematics and science test scores in the district over a ten-year span and challenging the new CF as an insufficient mechanism for ensuring that students learn mathematics and science. This was the first of many public challenges made by opposition groups to the new CF.

Focus Question and Follow-up Discussion

While this session was intended to stimulate discussion about assessing the successful implementation of a state's CF, the following question caused some groups to focus on the related issue of assessing student performance:

> *In trying to link CF implementation and student performance, what benchmarks might your team develop that would help assure stakeholders that progress is being made to this end?*

Thus, responses included benchmarks like:

- increased enrollment in high school mathematics and science courses, which is interpreted as evidence of increased student interest resulting from different structuring strategies
- increased student confidence in doing mathematics and science at the middle school level.

While no group shared actual seeds of a plan to assess CF implementation, one group discussed the importance of allowing the public to see examples of good student work. By seeing evidence that reflects student attainment of the standards, parents (who apparently already have faith in the statistical information provided by standardized tests) can see what students are doing in mathematics and science. Only then can parents be convinced that the CF provides the scaffold that allows for learning that they care about.

Correlating assessment with the CF was discussed. The public needs to be involved in discussions of the validity of test scores and the importance of such skills as the ability to write sustained analytical prose or do mathematical problem solving. Standardized tests are changing, and, if this process continues, perhaps the tests could serve as benchmarks.

A final group noted the need for benchmarks in two dimensions simultaneously over time: process and outcome. Process benchmarks might include mentoring or partnership (e.g., school-business) development of curriculum modules. Outcome benchmarks might include elimination of remedial classes, as well as student demonstrations of real-world applications. The group asked, What would happen if the CF movement was successful and created a whole generation of critical thinkers? Some group members who have apparently encountered resistance to state CFs noted a perceived discrepancy between what students are being taught to know and be able to do and the economic reality of the future job market. They went on to state that while it is important to understand the basis for this perception, which may lead to resistance, a number of equity reasons make it utterly essential to continue developing CFs.

Participant Perceptions

Most participants appreciated the opportunity to work in state teams during this session, although the perceived success of this work varied considerably.

"As a classroom teacher involved in the writing process, it was interesting to hear how our document is forming policy in our state."

"Sometimes the conversation drifted to unrelated topics."

"Still did not get down to real issues."

While the scenario was designed to provide a structure for state groups to discuss their plans for implementing CFs, at least one group did not follow this plan. This group adhered stringently to the

task at hand, as indicated by the following comment: "I would have preferred discussing the plans for implementation in my state instead of the scenario." Another participant offered, "This . . . was valuable . . . less so for assessing implementation than the status of ongoing implementation plans." And yet another took a very practical stance: "It was a start."

Sharing of Resources

Participants from several states accepted an open invitation to share information about resources they found useful or developed for their CF implementation effort.[6] They were also referred to copies of the latest CF Resource List developed by the CF Task Force, which includes annotations of some resources.

In New Jersey, 10,000 copies of a free document were distributed to members of state mathematics associations, PTAs, and other groups. The New Jersey Math Coalition sold another 10,000 copies for $10 per 30 copies. The state is seeking corporate sponsors to assist in getting the documents to districts and distributed 25,000 more free copies during a Math, Science, and Technology Workshop.

In addition to a new curriculum model, Ohio has developed a set of tools to help curriculum committees and district and county offices of education develop curriculum that aligns science instruction with classroom-based open-ended assessments. The Environmental Education Council of Ohio also developed vignettes that support the model.

The Pennsylvania Mathematics CF is now in its second printing. It includes instructional and assessment activities. The state has also published *Math for the 21st Century* and a correlation matrix that links student learning outcomes with the NCTM standards.

Indiana distributed worldwide 60,000 copies of the *Indiana Fact Proficiency Guide* (published in 1991). The state's mathematics assessment program is written from the guide, which also guides textbook adoption. Indiana also publishes *Mathematics Assessment: The Hoosier Alternative,* a document used to provide inservice training for teachers.

Delaware publishes drafts for mathematics and science CFs in newspaper format. During December 1994 and January 1995,12,000 copies of each CF draft were sent to educators throughout the state. The drafts include pull-out review forms for feedback.

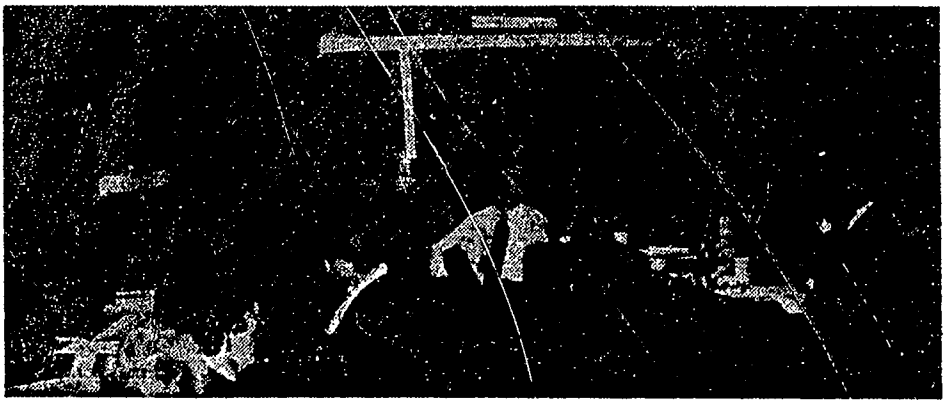
[6]Several documents that were displayed are not described, because either the names of the documents or the state from which they could be obtained was not provided.

[Note: An informal table talk session took place Thursday evening. Seven participants talked about two specific state CF projects.]

Session VI
Four Continua of CF Implementation

Prioritized lists of issues that participants believed were crucial to implementing CFs (see Session IV) provided the foundation for this session. The same issues surfaced from four groups working independently: (a) professional development, (b) communication, (c) policy and politics, and (d) beliefs, vision, and values. These focal issues were options for four concurrent discussion sessions. With CF Task Force members facilitating, participants discussed CF activities in their states and districts, developed concise phrases describing these activities, and posted the phrases along an implementation continuum ranging from awareness to institutionalization. Each group selected a spokesperson to share its continuum with the large group.

The continua, reproduced in Figures 7 through 10, compile efforts, strategies, and activities. Pooling information from across the nation generated a rich and varied list of implementation activities.



A conference participant displays a sentence strip on which she has written a concise description of a CF activity in her state or district

Professional Development (See Figure 7)

The Professional Development Continuum ranges from awareness activities (such as conferences and workshops for teachers) to institutionalization (specific projects that demonstrate the continued use of the CF—e.g., the North Carolina 1-2 Assessment Training/Preparation, Science Wizards, Math Masters, and the Arkansas Crusades). A Florida participant noted that that state's project did not fit neatly in one spot on the continuum but achieves all levels of implementation, from awareness to institutionalization.

The professional development group chose to have three persons share information about their projects: the Arkansas Crusades, a district application of the Florida CF, and an Algebra for All Workshop conducted in Mississippi. Following is an edited transcription of this information.

Arkansas

In Arkansas, when we started trying to decide what to do with the CF and implementing the CF, we got groups of teachers together and came up with a syllabus for a graduate course. One of those called Math Crusades is for math teachers of [students] grades 5 to 16; one [is] called Science Crusade, for science teachers [of students] grades 5 to 16; and the third course is called the K–4 Crusade, which integrates math, science, and reading for teachers in grades K–4. We based all of the syllabi on the NCTM Standards, anything we could find nationally in science, and our state CF. . . . We've written 15 modules for math and for science and about 26 for K–4, [each based on] . . . the national standards [and] the state frameworks. . .. We have all types of instruction strategies that we . . . [use] with the teachers . . . . Modeling cooperative learning, we use manipulatives and science equipment. We ask the teachers to keep a portfolio throughout the entire time they're in the graduate course . . . and in that portfolio they have to document their professional development growth, using the standards as a basis. . . . Most of the time they come one night a week. This is a graduate course. They can take pictures of their students interacting, they can bring back pieces of the student's work, and we reflect on that. We use writing in . . . [the] course. One piece in the portfolio that was different from what I heard in a lot of the other states is that we require a public awareness piece. The teachers must write a letter to the editor . . . speak to a Rotary Club, Kiwanas Club, American Legion, church group, [or] Boy Scout den mothers [group]. They take their manipulatives or science pieces and they talk to the public. They document that [with] . . . an agenda, pictures, [or] a sign-off by the president of the group. It's all in the portfolio. That's how . . . we're trying to move from awareness . . . through the implementation state, getting the public to buy into the changes in math and science. It's interesting to watch . . . the teachers . . . go back and talk to their school board or their own peer groups as well as anyone in the public about this. . . . They also . . . do . . . peer coaching or tutoring . . . . What we've found is that we have had good support on the K–4 level. The Governor gave us about 3 million dollars the first year, and 3 million the second year to do this project for K–4. In the beginning . . . when we wrote the common syllabus, all 11 colleges agreed to teach the same syllabus on all 11 campuses. And there are state [funds] . . . to improve economic development through math and science . . . . Every college professor in the Arts and Sciences or College of Education that takes the crusade with these teachers . . . [gets] five thousand dollars to go back and buy calculators, science equipment, [or] math equipment to help provide them with the materials they need. They also are getting a firsthand look at what teachers are doing . . . sharing . . . conversations, and they get introduced to the state CF . . . standards for math and science.

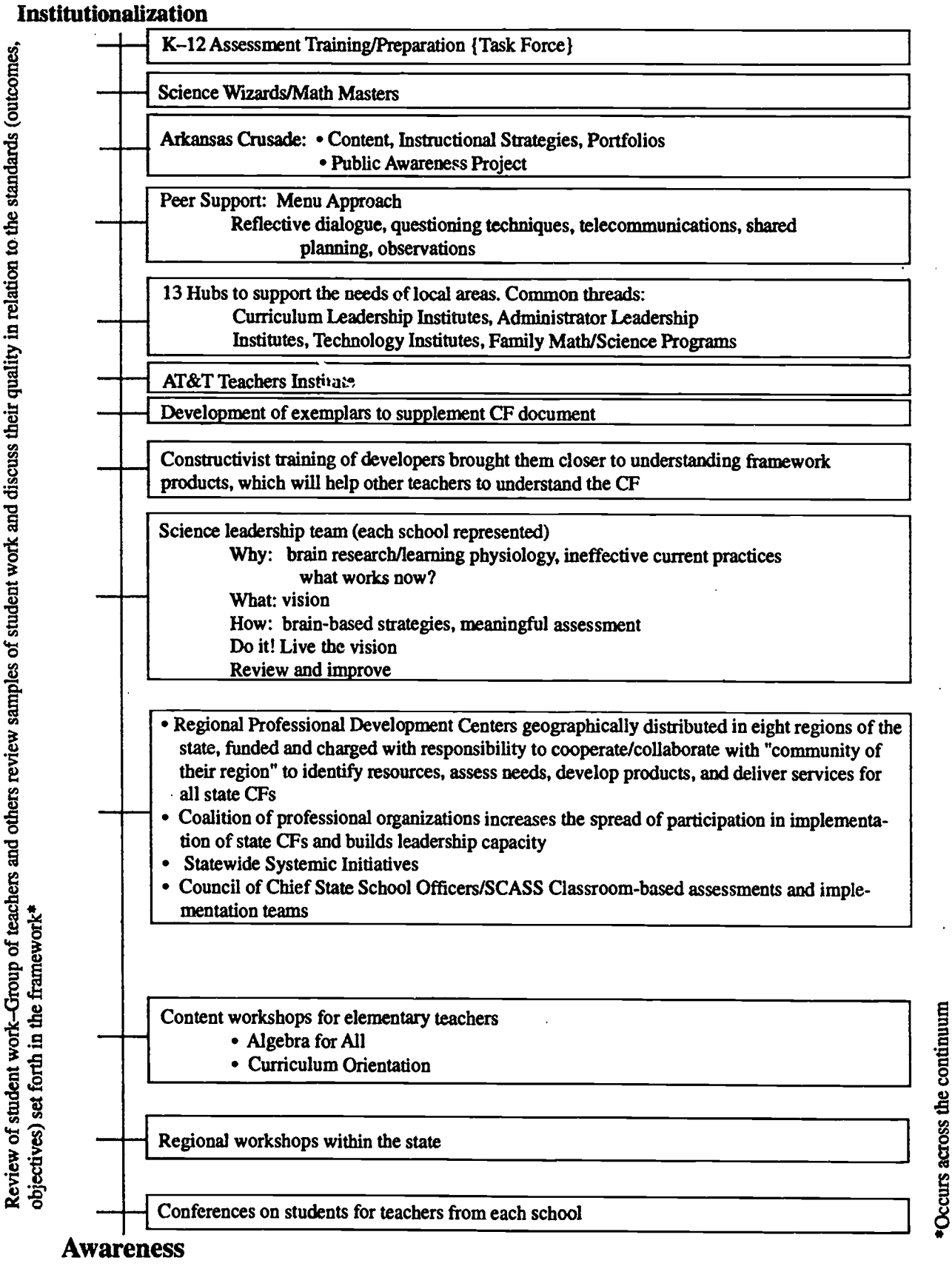


Figure 7. CF Continuum: Professional Development

Florida

[This is] a district view of how we implemented the wonderful state CF that we have. We didn't put [it] hanging anywhere here from awareness to institutionalization because what I did is take a group of people the whole way. The thing I think is most important is that I've been working on it three years. We spent a huge amount of time on [it] . . . . Look at ineffective practices that are currently going on and why they're ineffective. Don't just say they're ineffective, but have them [the teachers] look at it and determine that they are ineffective. . . . What's working that they're doing now? . . . Look at it in light of the research. Why is it that it works? Spend a long time on the why. Then when we go to the plot, it's division. They develop division based on what they know now. During the how, I give them information on . . . those kinds of things. The next phase . . . is to review and improve . . . . We produced this based on the . . . Florida CF. . . . All of our schools were represented, and now they demand to include math . . . because they realize science can't do its job without enlightened math teachers.

Mississippi

What I've spoken about . . . is that Algebra for All workshop that was held by the Mississippi Council of Teachers of Mathematics. This . . . workshop was funded by Eisenhower funds. . . . In this three-day workshop they were introduced to the Mississippi curriculum structure and . . . were . . . given assessment practices and strategies and . . . a workbook that had activities in it that they could go back and use in their classroom in either Pre-algebra, Algebra I, or Algebra II. It was no cost to any of the participants. They received a graphing calculator and activities that they could use on the graphing calculator. They also have to attend a one-day extension of that workshop at the NCTM Regional Conference.

Communication (See Figure 8)

Communication awareness activities include making personal contacts with policymakers and providing them with copies of CF documents. Institutionalized activities included collaboration with schools, districts, and universities to plan and deliver teacher training. Highlights of the discussion session about communication follow:

- need to coordinate stakeholders
- need for user-friendly documents
- use of electronic versions of CFs and supportive materials to improve access and make them easy to update (i.e., make them living documents)
- use of numerous communication tools

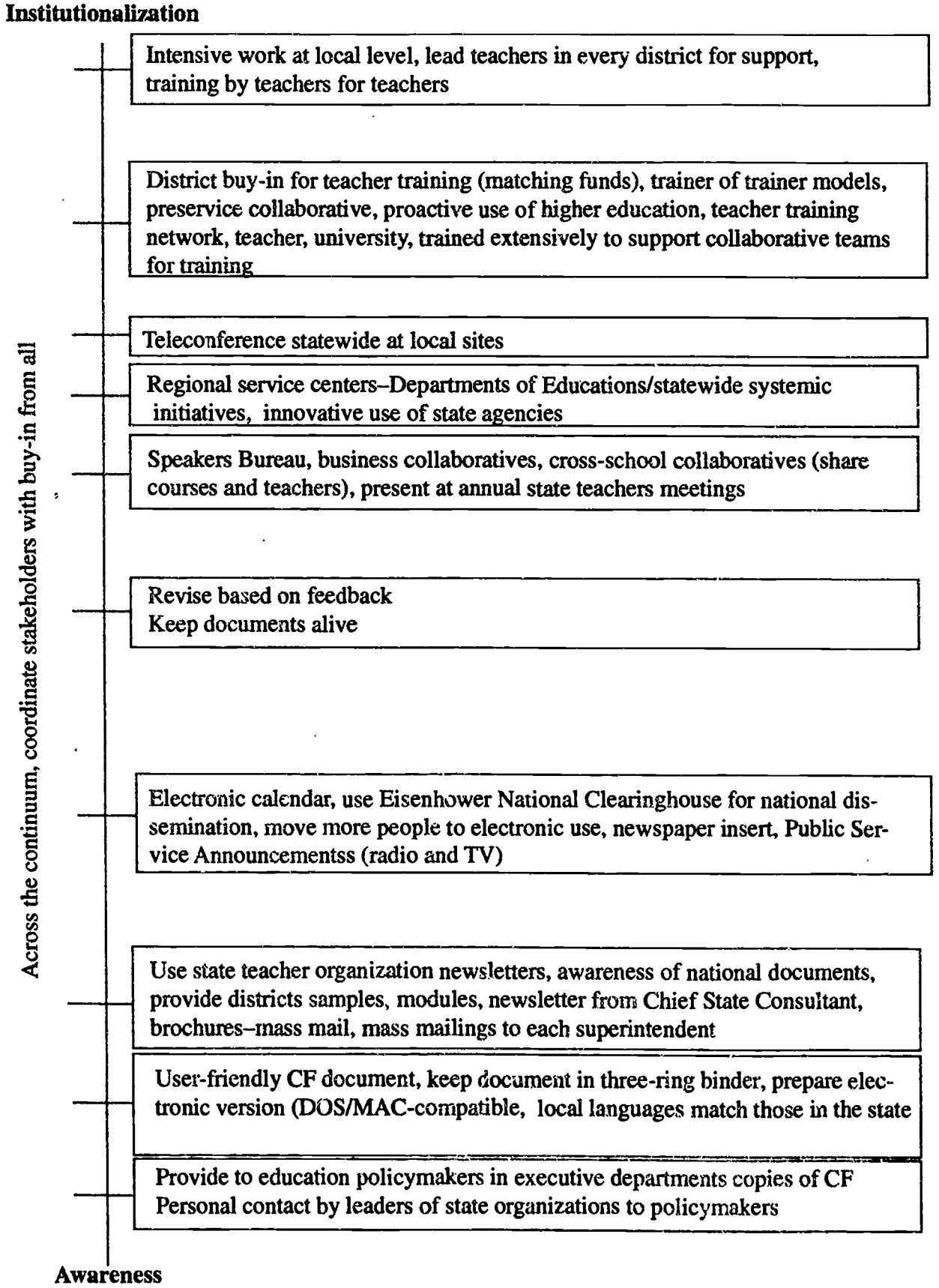
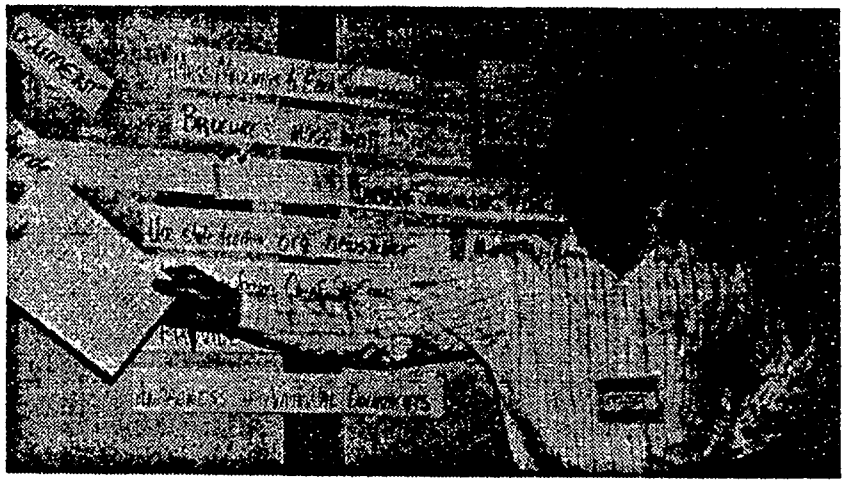


Figure 8. CF Continuum: Communication



A spokesperson explains the result of his group's CF activities relating to communication

- different levels of communication, from public interest to the classroom level
- need to move away from getting information to people toward finding out what's happening in the classroom with the students (are teachers doing something with [the CF] after we get it to them?). Until we get to this level and see what happens, probably no change is taking place. . . . Go back . . . and start all over if we have to.
- importance of buy-in by all

Policy and Politics (See Figure 9)

The policy continuum ranged from increasing awareness of the CF among professional associations and teacher groups to achievement of consensus among all constituencies on CF content. The following information was shared by this group:

> W e. . . tend to be over on the left side [of the continuum—in the awareness stage]. We really feel that we are fighting an uphill struggle, in . . . [dealing] with the power structure . . . the policymakers . . . new politicians coming in. The states represented in the group have made . . . significant progress in . . . producing frameworks . . . but there're significant concerns [about their] reception . . . by policymakers. . . . The group felt that they should be . . . involving diverse groups, doing a lot of outreach work . . . educating those groups . . . [about] where we want to go in terms of implementing frameworks and moving in the direction of school reform. There's a lot of talk about building coalitions, particularly . . . [with] businesspeople. We find that Republican governors (which most of us seem to have) . . . tend to be very responsive to messages from the Chamber of Commerce or from the various business groups that may be operating in a state. It has a much higher impact if someone representing those kinds of groups comes in and talks to the governor about the importance of math and science reform than it does if one of us, who is perceived as having something of a vested interest [does] . . . that. So we . . . think we should make a major effort to reach out to the business community. . . . Don't just ask them to support it [the CF], without spending the time talking to them and letting them know the reasons why we're engaged in educational re-

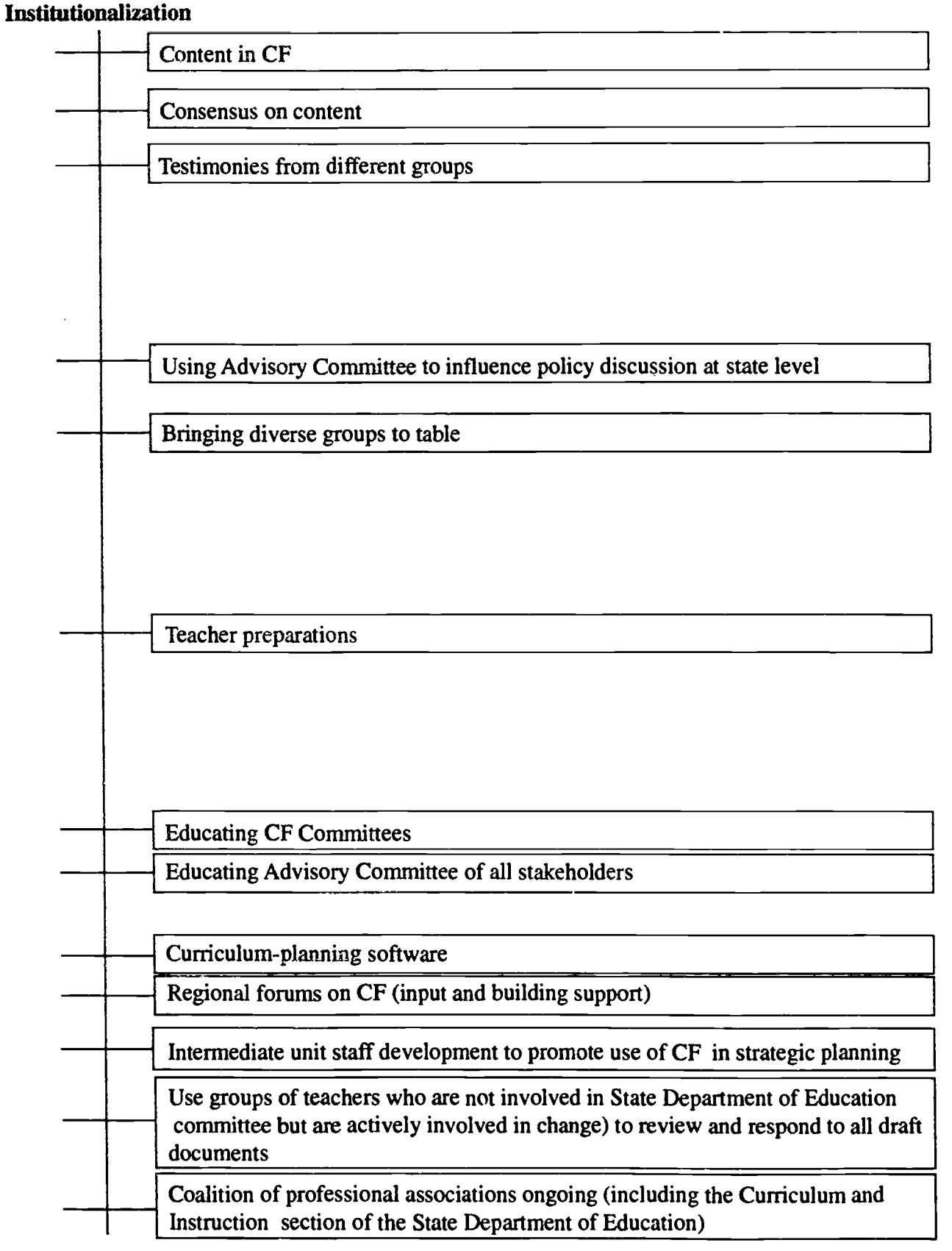


Figure 9. CF Continuum: Policy and Politics

form . . . . Most of us have had, because of finances and things, relatively small groups involved in the development of frameworks. But we should be . . . bringing in more teachers who did not work on the development, letting them review and make suggestions about future versions . . . [and] about implementation, so that we continue the process of building a very large support group for our reform effort. We feel that as individuals we're not going to be able to have much influence on policy at all. We can only do it if we come forward as a very large group, a group that has a significant understanding of what we're trying to do in the way of math and science reform.

Beliefs, Values, and Vision (See Figure 10)

This group's continuum ranged from such awareness activities as presentations at professional conferences and teacher discussion groups to cognitive and peer coaching—activities that help ensure the institutionalization of CF beliefs, values, and vision. The discussion was summed up as follows:

In order for all educators to empower children we . . . ourselves must feel empowered . . . . We must do something at the beginning to make teachers feel empowered. Telling them . . . isn't enough. . . . It may need contracting with an outside counselor or psychologist to work with us on how to empower. Until this is done, then we cannot truly formulate a shared vision. We need to . . . ask where . . . [we are] in this process . . .where we're going, and then the framework can be a vehicle to get us there. If we look at the continuum from the awareness level down to the institutionalization level, [you see] . . . a flow from reflection to dialogue, back to . . . reflection, to training . . . . Reflection was a constant piece of it. I think I likened it to . . . the Concerns Based Action Model . . . . One of the things we kept coming back to is that . . . beliefs are individual. Schools don't have beliefs. Schools can have a vision. But individuals have beliefs. And therefore beliefs have to be addressed at an individual level, which is why all the reflection . . . [and] all the dialogue [are needed].

A spokesperson explains the result of her group's CF activities relating to beliefs, values and vision

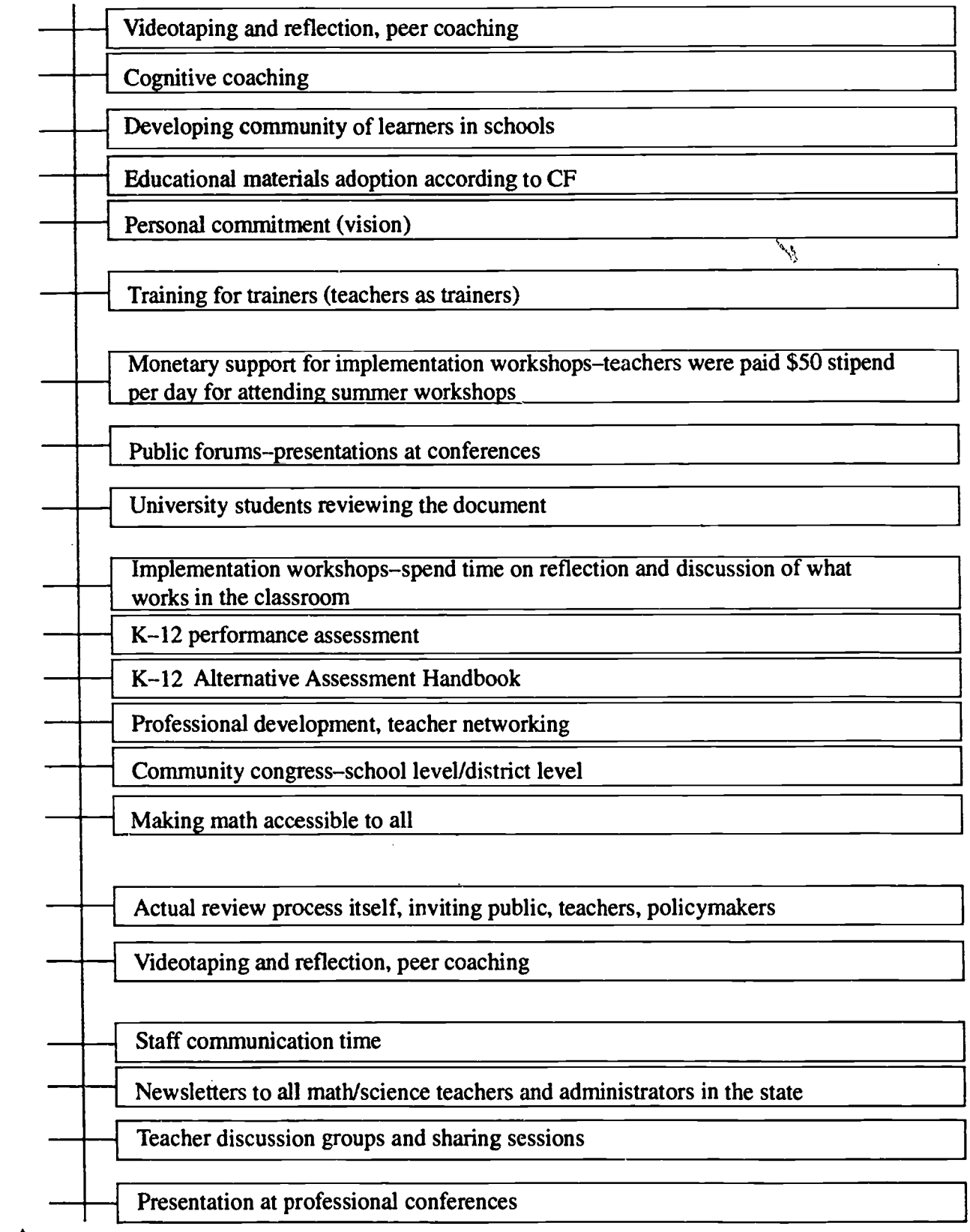


Figure 10. CF Continuum: Beliefs, Values ,and Vision

Participant Perceptions

Participants perceived this session positively. They considered the opportunity to share, exchange ideas, and learn how other states are successfully addressing implementation to be valuable. Comments were overwhelmingly favorable. As one participant noted, "One of the best parts of the conference. Gave everyone a broader perspective."

Session VII
Regional Sharing

Participants met in regional groups to discuss potential CF Task Force technical assistance in implementation, to establish timelines for collecting data for the implementation case study, and to begin the process of collecting information for the case study.[7] Groups informally addressed the following four focus questions:

- *What are the present status and future plans for CF implementation in each state?*
- *What major problems are anticipated in each state with regard to implementing CFs?*
- *Do you have any needs or concerns that the CF Task Force or other states (in or outside the region) could help remedy?*
- *What else can the CF Task Force provide for you to support your CF implementation efforts?*
- *How will the data for the CF Task Force case study be collected, by whom, and when?*[7]

During this session, the Regional Alliance discussion group developed a list of suggestions for technical assistance areas:

- Publish articles on successful programs, positive results.
- Create (or find) powerful interactive videos that can guide discussions of professional training.
- Create and maintain a resource list.
- Create and maintain a lending library.
- Improve dissemination of REL, LNP, and Consortia products (follow dissemination suggestions presented to conference participants).
- Increase awareness of REL, LNP, and Consortia activities.
- Increase visibility of RELs.
- Provide specific assistance with assessment, particularly its alignment with curriculum.
- Promote broader electronic use.
- Develop or share specific resources on reform.

[7]See Appendix E for the CF Implementation Case Study Design Focus Questions.

Participant Perceptions

Many participants thought this session was particularly useful, although a classroom teacher expressed the following concern: "This was . . . definitely administrator material. Classroom teachers do not have access to this info . . . [nor] are [they] allowed to attend [the] workshops discussed."

Conference Evaluation

Evaluation forms distributed to participants (building and classroom, intermediate, and state), panelists, and CF Task Force members were used to evaluate the conference. Of these, 37 percent were returned by the due date. In addition to requesting comments about specific sessions, the questionnaire elicited information about the "appropriateness, relevance, and timeliness of the topic," effectiveness of the interactive approach used at the conference, and suggestions for the July conference. (See Appendix B for a complete transcript of all responses.)

The following comments from participants provide a sense of how the conference was received:

"There is no better time . . . to synthesize efforts nationwide to implement CFs . . . . Efforts should be continued to find commonalities that are workable and that can transcend state or regional boundaries."

"I appreciated the time to network with colleagues . . . facing many of the same issues. . . . It was also interesting to learn of similarities and differences in the processes among the states . . . [and] extremely valuable to be able to talk with folks from our own state since we are scattered around in different locales."

"If . . . classroom teachers had the opportunity to see what 'goes into' bringing about change prior to reaching the classroom level, the job of implementing would be easier."

"'Jewels' of ideas and information kept popping out of the prepared material and out of the interactions among participants."

"I didn't expect to gain as much insight as I did. I'm still thinking and considering what people shared, what works and [what] doesn't."

"What an opportunity to stretch, learn, grow, and . . . contribute to a better world! Lots of people with their heads and hearts in the right place!"

Highlights of suggestions for topics for the fall follow-up conference follow:

- technical assistance for the classroom teacher
- development of a model action plan for implementation
- accountability (to parents and the public)

- practical approaches to breaking down barriers to CF implementation
- policy alignment
- assessment implications of CFs (classroom and state)
- evaluation of CF implementation (classroom and state)
- coordination of implementation stakeholders (e.g., media, teachers, school boards, higher education personnel)
- relationship of CF implementation and the change process

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Appendix A

Curriculum Framework (CF) Implementation Conference
Hilton Head Island, SC
January 26–27, 1995

Agenda
(As revised during the conference)

Wednesday, January 25

8:00 – 9:00 p.m.	**Networking social** with light hors d'oeuvres, hosted by SERVE

Thursday, January 26

8:00 – 8:30 a.m.	**Continental breakfast,** hosted by SEDL
8:30 – 9:00 a.m.	**Icebreaker, welcome, and overview** of Regional Educational Laboratory Network Program and Eisenhower Regional Mathematics and Science Consortia Curriculum Framework (CF) activities
9:00 – 10:45 a.m.	**Session I: Exploring the Meaning of CF Implementation** Part A. *Participants shared perceptions of the article "Revolution in One Classroom"* Part B. *Participants established a common vocabulary for implementation and dissemination* Part C. *Participants voiced their preferences as to whether or not to adhere to the proposed agenda*
11:00 – 11:45 a.m.	**Session II: CCSSO Study of State CFs in Mathematics and Science,** Rolf Blank, Council of Chief State School Officers *Participants learned about the CCSSO's latest CF work*
11:45 a.m. – 1:00 p.m.	**Lunch,** hosted by SERVE
1:00 – 2:00 p.m.	**Session III: Panel discussion: "CF Implementation Processes: Experiences from the Field"** *Panelists representing each level of the constituencies involved in the conference—state, district, and building or classroom—shared their experiences in implementing mathematics and science CFs*
2:15 – 3:15 p.m.	**Session IV: Identification of barriers to and facilitators for implementing CFs** *Participants discussed barriers to and facilitators for implementing CFs*

3:30 – 4:30 p.m.	**Session V: Assessing the Effectiveness of the CF Implementation Process** *Participants used the Mountain View scenario to stimulate discussion of different perspectives on how to assess the process of implementing mathematics and science CFs*
4:30 – 5:00 p.m.	**Sharing of Materials** *Participants shared samples of curricular or public relations materials developed or in use in their state, intermediate agency, or building or classroom to assist in the implementation process.*
5:30 p.m.	**Dinner (on your own)**

Friday, January 27

8:00 – 8:30 a.m.	**Continental breakfast,** hosted by SEDL
8:30 – 8:45 a.m.	**Announcement of Agenda Revisions**
9:00 – 10:00	**Session VI: Sharing of Activities and an Implementation Continuum** *Participants chose one of four discussion sessions in which they shared experiences relating to CF implementation and developed a continuum depicting a range of efforts conducted across the nation. Session options included communication, professional development, policy, and beliefs, values, and vision*
10:15 – 10:45 a.m.	**Sharing of Results**
11:00 – 12 noon	**Session VII: Regional Sharing and Technical Assistance Options** *Participants met by region to discuss the current status of CF implementation and to identify possible areas for technical assistance by the CF Task Force*
12 noon	**Adjourn**

Appendix B

Responses to Follow-up Participant Questionnaire

Follow-up evaluation forms were mailed to all 70 conference participants, including building or classroom, intermediate, state, and CF Task Force representatives. The form consisted of six open-ended questions. One question elicited responses in six areas. Responses were due back by February 27, 1995. Twenty-six completed forms were returned, a response rate of 37 percent. What follows is a complete transcript of all responses.

1. **The conference in Hilton Head focused on exploring issues related to implementing state mathematics and science curriculum frameworks (CFs). Please comment on the appropriateness, relevance, and timeliness of this topic.**

It was great to share ideas and discuss some of the positive as well as some of the roadblocks to framework implementation.

A very relevant, appropriate and timely topic. This conference helped clarify, if not answer, many issues.

Right on target

Very good

All are significant based on the discussions that took place.

An important topic for states to discuss and to be able to share strategies.

It was very helpful to see how other states were addressing the issues involved with curriculum frameworks. The conference was very timely — textbook adoption for math in our state is just 3 years away — revisions must occur before this.

The sharing of implementation plans was very insightful. It came at a time when PA is trying to implement a plan of dissemination of its frameworks.

It was quite appropriate and timely to focus on frameworks. Curriculum frameworks is a new structure to looking at the broad picture of curricular scope and sequence, and evaluation in a holistic fashion. The emphasis is necessary to give us a common understanding.

This topic was timely and relevant for my state. I enjoyed sharing ideas.

Very appropriate, relevant, timely, and IMPORTANT!

On target

Very timely — appropriate and relevant to our state's CF

Liked opening activity how laminated objects were like frameworks.

I endorse the process and feel that there is no better time than now to try to synthesize efforts nationwide to implement curriculum frameworks. This conference was appropriate, timely and relevant and efforts should be continued to find commonalities that are workable and that can transcend state or regional boundaries.

We are all in different places. The front-runners are helpful to the rest. They have the toughest time. Very appropriate and timely.

This topic was needed to help states prepare for implementation of CFs. Avoiding problems or being prepared is very helpful.

It was very relevant, appropriate, and timely for Ohio. I found it valuable.

I appreciated the time to network with colleagues who were facing many of the same issues

that we are in our state. It was also interesting to learn of similarities and differences in the processes among the states. It was also extremely valuable to be able to talk with folks from our own state since we are scattered around in different locales.

As states "grapple" with the complex issue of implementation in an unsure political environment, all the discussion possible is appropriate and helpful.

It's much harder to find common ground for this group — its makeup is much more undefined than the development group. Implementation almost needs to be addressed more at the various levels before crossing levels. However — right on target w/appropriate relevance, and timeliness.

The opening article on classroom math implementation (Mrs. O) in California was on target! Aligned translation in the classroom is central. "Boundary breaking" between states on an island — interesting!

Good time to assess since standards have been out long enough to have effects in classrooms.

The topic was very timely. If those (classroom teachers) had the opportunity to see what "goes into" bringing about change prior to reaching the classroom level the job of implementing would be easier.

Vital to our state. Timing was perfect as we have just begun the revision of the draft of our first chapter. You have really been effective in helping our state.

2. **The Hilton Head conference included a series of activities focusing on topics listed below. Please comment on how effective these were for increasing your understanding of each topic.**

- **Sharing of perceptions pertaining to the meaning of implementation through small group discussion of the article "Revolution in One Classroom" and an introduction to stages of dissemination (spread, choice, exchange, implementation)**

  It was interesting to discuss the article in a group because it forced me to look at what others thought about what implementation meant. Depending on our experiences various interpretations arose.

  The article was a waste of time and almost an insult to the reader's intelligence. The main point could have been made and reinforced in 2 paragraphs. Thus the discussion was not as fruitful as it could have been.

  This was a good way to get people talking. I'm surprised how many people actually read the article!

  Very good discussion vehicle — More time could have been provided for discussion.

  Moderately effective

  Helpful — the discussion that followed this was okay until the concerns evolved about the remainder of the conference program. I thought this was a premature concern.

  Implementation for the most part was under way in states attending — needed to move on with the how.

  Great discussions!

  I feel this was a strong feature.

  I truly appreciated sharing the perceptions related to this scenario. It gave me a sense of "what is going wrong" and why. It's a piece that I've been able to share back with my staff and induce some critical thinking on what the new standards mean.

  Effective

Discussion of the article — weakest part of the conference. Dissemination presentation — very good.

I thought the article was not appropriate. It was too long and interpreted differently by many.

Good

The concepts involved in spread, choice, exchange and implementation were timely but could have been expanded upon.

I liked the use of pictures [in the synectics activity] better than the article. Parts of the article were distracting to focus of the conference.

This was needed and very helpful but not enough time for discussion.

It seemed to work well. I would prefer to discuss an article that was on a different level from the teacher perspective — if there is such a thing. Such as decisions a supervisor is faced with.

The article made me angry when I first read it, and, by stirring up these deep emotions made me want even more to discuss it. I enjoyed the discussion of the stages of dissemination. The technology is impressive.

An excellent opportunity to share

Small group conversations seem to get great response from participants. Maybe some small group reporting out would minimize time crunch felt.

Great mindset to conference agenda. Small group ideas helped stir some personal rethinking regarding peer support, restructured school years.

I wish we would have used these 2 themes throughout rather than just at the beginning.

The article was appropriate and a catalyst for discussion. It's too bad more time was not available.

The article is a perfect tool to launch us in the direction we need to go. Our small group discussion was very valuable, and it set my focus. Thank you for sharing this article.

- **Overview of "A Study of State CFs in Mathematics and Science" from the Council of Chief State School Officers**

Interesting to a point. I could have read and interpreted the graphs myself.

This was not as informative as it might have been considering the speaker's unique position. Much of what he said was familiar. A few statistics were helpful. I had hoped for some visionary projections into the future.

The information was not accurate. It is troubling to realize tnat the information gathered and compiled is not correct.

Not relevant to this group — more appropriate for developmental groups. In either case — materials could have been disseminated in written form only. Contents made good reading, but not good "listening."

Interesting to see what other states are doing

Not valuable — it's interesting to know they've undertaken this but their data are incomplete — thus the dissemination of their findings is of great concern to me.

Served only to verify data received

Very interesting — helpful information is being collected.

OK

It was good information to have and to hear. It made me realize that there is no way to collect data that is timely and acceptable to all. There was a lot of defensiveness at this

session by frameworks advocates. Maybe we should all accept that communications are not perfect. We're human after all.

I liked this session and gained information from a national perspective.

Not very effective

This was information that I had already obtained from CCSSO.

Boring presentation — info good

Rolf did a great job! Very informative

The Council of Chief State School Officers did not have all of the information he needed to present a realistic view of what is in progress.

Good — wanted it to be more up to date

The presentation was very good. I wonder how valuable the study was because of the difficulty in drawing conclusions about differences in state CFs.

Interesting statistics . . . It was interesting to see the differences among early frameworks and those that have come since. I'm not sure an aggregate such as this gives a true picture.

Very good but could have involved more discussions — overheads were too structured and difficult to see. Some major themes from the overall pieces would have been more valuable.

Ineffective

Some interesting patterns emerge from study of states.

Good info but it could have been distributed for us to read.

Very informative. I have a much better understanding of what other states are doing. The vision of what can be done & where we can go is extremely valuable.

Could have been eliminated to allow for more participant discussion

- **Discussions with panelists (building or classroom, intermediate, and state) with experience in implementing CFs, followed by role-alike session focusing on barriers and facilitators to implementing CFs**

Valuable because it was great to see how states/districts/classrooms took on state frameworks and implemented them.

Very useful

Very informative (discussions). This was not effective in our group. We thought the activity would have been more effective if the barrier and facilitator groups worked together.

Frankly, I'm tired of hearing from California. I feel that other states are attempting to reform curricula in a more systemic, deliberate manner, involving all stakeholders.

Very effective

Very helpful

Important — relate to #1

Some key ideas came out of this session — collaboration is a must!

Good experience

I found this very helpful in trying to learn from others' experiences. There are many ideas that will help me and some approaches that don't apply. It's always good to hear success and build one's "what could be" list.

Important concept, but our "activity" itself was a barrier to real progress.

Good

Worthwhile
Did not find this helpful. Why not use Eisenhower grantees?
Discussion on implementing curriculum frameworks needed more time.
I found myself pulling ideas that applied to me. See enclosed notes — there were good ones. (Comment applies to last four items under #2)
I found it very valuable to talk with other state consultants.
I would like to have had more opportunity to share, particularly to hear what other states are doing. Some of this emerged in this session but often we were too involved in the task.
OK but very similar to activities already undertaken in our individual states.
Could get responses in role-alike sessions to these issues without benefit of panelists.
As a panelist, hope we helped! Recognized patterns in success strategies (top down/bottom up teacher leadership). The facilitation/barriers charting with yarn was a challenge to facilitate but resulted in super "synergetic" surprises.
I found that implementation lacked creditability. No discussion of–how do we know?
This was extremely valuable—the most thought-provoking. This needs to be explored further at July conference.
Panelists were very informative. Barriers and facilitators was valuable to a smaller degree as I heard great input from other states.

- **Small-group discussions, by state, of approaches to assessing implementation of CFs (stimulated by the Mountain View scenario)**

Okay
Generally very good, although sometimes the conversation drifted to unrelated topics
This was great. It gave us an opportunity to work as a state team.
Not effective
Very helpful
This should have been first on the agenda to set the stage.
This was interesting but the case was written in a way that the reader could add many factors.
Since I don't remember much about this, it must not have held much value. (Was getting tired!)
This scenario was very real for our state. However, this session was not an effective one for our state.
Effective
Excellent
Very worthwhile
Good — worked well
Small-group discussions, by state, of approaches to assessing implementation helped but I would like to see more in this area.
I would have preferred discussing the plans for implementation in my state instead of the scenario.
This too was valuable for me. Less so for assessing implementation than the status of ongoing implementation plans.
This was one of the most valuable aspects for me. As a classroom teacher involved in the writing process, it was interesting to hear how our document is forming policy in our state.

OK but needed more focus
Groups I circulated among did not like this activity — Would have preferred focused conversations while in state groups
Helped affirm localized understanding, inclusive involvement in reform process very important
Not enough. Still did not get down to real issues.
It was a start.

- **Sharing of activities focusing on one of four aspects of CF implementation (communication, professional development, policy, or beliefs , values, or vision) and subsequent large-group sharing of highlights of these conversations**

Great learning and sharing experience
One of the best parts of the conference. Gave everyone a broader perspective.
This was a good opportunity for sharing, but I would have liked to attend more than one session.
Very good
Very effective
Helpful — the summary of my group (professional development) was not representative of our presentation/conclusions within our subgroups. The leadership for the professional development group was weak.
Served to demonstrate shared concerns
Helpful information — great awareness of what might be done next time around
This small-group discussion was very interesting and informative!
This was very good information. Learned good things, especially when each group reported back and "best" ideas were shared. Many things I can incorporate in my thinking.
I gained new ideas from these sessions.
Effective
I attended communications. The discussion and exchange of ideas was great.
Good way to pull information together
Fine
The sharing of activities on communication, professional development, policy or beliefs helped immensely. These should be written and distributed for use by interested parties.
This was very informative but again not enough time for discussion.
I also learned a lot about the similarities and differences among and between states with respect to policy.
I was impressed by the similarities among the participants even though we were coming from different development and implementation experiences.
Very effective
Our group seemed to appreciate talking (and thinking others were listening!)
Professional development — great ideas with systemic considerations
OK
I got a little bit of very valuable ideas & advice.

- **Discussion by region of regional technical assistance options**

Excellent to know there is someone to hold your hand
Very important meeting. Lots accomplished.
Super! This was great to see where we were w/in the region and T.A. that is available.
Very good
Effective
Helpful
Availability is important information.
Good
Always good to review the "in house" communication channels
It was good to know that the region "is there to help." It sounds like the resources can be made available, if the plan is well defined and inclusive. I have discovered a new source for help.
Effective
Very little time given for this session
Good to summarize and know of future expectations
Not effective. Seemed to be in a hurry to leave.
The discussions by region and technical assistance options gave me ideas to use locally.
This was very helpful in informing the states in the region how we can work together to help each other in CF implementation and other related issues.
I am not clear about this question or what options were presented. I'm sorry.
This was excellent.
I appreciate the willingness of the Regional Alliance to meet the needs of each individual state.
Went well in our own group
We were more observers — our lab not involved. As a local practitioner in reform process, some thoughts: 1. Are states considering value of adults "constructing meaning" related to implementation — longer process but increased implementation? 2. Seems Fullan's Change Forces would interpret out the value of top down/bottom up, boundary breaking stuff that would help states and our nation.
Sorry, I had to miss this but I got some good technical assistance on the beach on our SEDL walk. Got a pretty shell too!
As a classroom teacher this was not valuable to me. It was definitely administrator material. Classroom teachers do not have access to this info. or are allowed to attend workshops discussed.
Enjoyed this — wish we'd had more.

3. **In general, how effective was the interactive approach, as it was used at the Hilton Head conference, for facilitating discussion of the above topics?**

I thought the entire conference was well planned and executed (even though there were a few reservations at first).
Generally effective. However, the facilitator's notes (script) were much too detailed and confusing.
Very useful. I do wish there had been more opportunity for group (state, intern, teacher) discussions and examples of what we are doing. Less structure, more conversation.

Good — leadership was responsive to needs of participants
Effective
Excellent
Day 2 was best — most participants believed we were focusing on developing a product for states not implementing CFs which never materialized.
Very effective — I liked the opportunities to share.
I always enjoy the structure of the interactions designed to generate discussion!
The interactive approach was valuable to the workshop. With a group of state leaders and idea makers, it is most effective to let them loose, so that ideas can flow to others.
I enjoyed the interactive approach.
Effective
Good
At times it, the approach, allowed for too many strong personalities to run the show.
Great!
The interactive approach for facilitating discussion was very effective and should be carried further at later conferences.
Continue a mix of small and large group — Perhaps seating changes occasionally in large groups to promote interaction between teachers, administrators, etc. of different states with different levels.
The interactive approach was very effective but again, time was a factor. Everything seemed rushed.
You did a great job.
Very effective. "Jewels" of ideas & information kept popping out of the prepared material & out of the interactions among participants.
By dividing participants into small groups beforehand, and generating discussion among these small groups, it allowed me an opportunity to meet folks I may not have had an opportunity to meet because we were not in any of the other sessions together.
Very effective — the sharing of ideas was free flowing. Everyone at the conference seemed anxious to contribute.
Small groups were very productive.
Sometimes passionate/lots of ownership in each state's implementation process . . .lots of food for thought for ALL of us.
Good
The approach was the way to go. As a facilitator, I would have preferred a pre-conference planning session. I was comfortable with my role but others were not quite as sure and in fact, admitted they had not considered the instructions given us. Teams working together need to "know each other" and understand role[s] the same.

4. Overall, did the atmosphere of the group meetings encourage you to make contributions that you wanted to make? Why or why not?

Yes, the relaxed atmosphere definitely encouraged me to make contributions and ask questions.
Generally. However, the negative statements about the process by a handful of people early on were given too much importance and served as a deterrent to open discussion later.
Yes, I felt very comfortable. This was a very low-key setting for such a high-stress topic.
Most were very comfortable. I had a different picture in my head when we did professional development, so I focused differently.

The group meetings were very "safe" because the guidelines were clear.
Yes
Yes
Most definitely — an "inviting" and professional atmosphere existed throughout the conference.
Atmosphere great
Yes
Yes, everyone is made to feel a valuable part of the group!
I felt very comfortable with the group meetings. People were inclusive of all ideas. Sometimes I stay quiet amongst curricular orators. I could keep up this time.
Yes, small-group interaction allows everyone to talk.
Yes. The atmosphere was emotionally relaxing, intellectually stimulating.
The breakout sessions provided a time to share.
Yes, felt free to interact
Yes. Very warm trusting climate was established.
The atmosphere, in general, was encouraging however, at times I felt that some persons would not accept ideas with open-mindedness.
Sometimes — I missed the social time because it was changed. Getting to know personalities first would have been helpful in understanding "where they're coming from."
The group meetings did encourage more participation or provide for better participation by all participants.
Yes. I liked the cooperative nature of the meetings and the receptiveness of everyone to what each person had to share. Nice people.
Yes, the atmosphere was relaxed (the environment added to this), people were warm and receptive, and the facilitators were willing to be flexible to the needs and suggestions of the group.
Yes — a great deal of respect among participants and the Regional Labs was evident.
A few people dominated conversations — either with power or rambling — but overall I feel that most voices were heard.
Yes. The varied approaches–large group/small group, job alike, etc.–helped to be "participant centered."
Yes — open atmosphere, good facilities

5. What topics would you suggest for consideration at the July conference?

Monitoring district/classroom implementation. What happens when you have begun the implementation process and the state decides to rewrite?
1. How to help the classroom teacher understand what a framework consists of, and to incorporate some of the principles in a modest way into the classroom. 2. Difference between "Scope and Sequence" and CF.
Please state objectives for each breakout session. The purpose of some of the activities was not always clearly stated.
1. How can the classroom teacher help given limited time, training and funds? 2. Creation of action plan for implementation. Work on it by state but have the ability to get input from others. This is "big business" not something to be done haphazardly because of time limitations. If this group can create an effective implementation model, other subject areas

can benefit. States and regions may have individual needs, but it seems to me a basic procedure can be created if individuals are committed to the task.

Coordinating stakeholders for implementation; Dealing with media; The role of school boards; Implementing standards in pre-service programs; Creating vignettes that reflect relevant & local implementation; Creating flyers & info. newsletters; National expertise on assessment & how to move away from norm-referenced tests; What are the components of a document & its implementation?

Have each state make a ten-minute presentation (only ten minutes — use a timer). We (LA) have found that this format forces people to define the most relevant points. Holding each presenter to only 10 minutes is critical to success.

Have to think more about this.

Is there a product to come out of all of this?

1. Contrast the state structure. 2. Knowing this structure present cases of implementation so everyone can connect to their situation.

I would look at the subject of accountability. We are looking at new performance assessment measures but what guarantees we can provide doubting parents of their validity. I think we have to win that argument before public buy-in to our frameworks concept. There is a place for standardization and performance assessment.

Continue the interactive approach.

Identifying real problems, then as focus teams generate potential solutions and action plans. Facilitate teams by establishing problem-solving model and assist as needed. This will differ from "role-alike/barrier" session: it will be REAL work, NOT an "activity."

Use of time — block scheduling

Get a better team in from LA

Strategies for secondary science/mathematics teacher involvement. How to involve community and business.

At the July conference, I would like to hear more about the different state policies for implementing frameworks and more methods of disseminating information that could help a local district in getting information out to their constituents. More sessions on assessment, policies concerning assessment and varieties of assessment being used.

Practical ideas "make and take" on breaking down barriers. Example the hypothetical situation — make them real and let's help each other.

Four aspects of CF implementation (communication, professional development, policy, or beliefs/values/vision). Assessing implementation of CFs.

I'm interested in how policy affects the decisions we have to make with regard to advancing science and math education.

"Next Steps . . . Where do we go from here?" More time to interact with state and region.

1. Experience with schools and districts that are developing programs based on the tenets of the state framework. 2. Alternative assessment based in the state frameworks. 3. How to implement the framework amidst resistance at the local level.

Perhaps a real working session in which a plan is produced using templates like those in dissemination handbook.

Constructivism — adult implications in implementation process. Fullan's research . . . *Change Forces* implications "Can't mandate what matters." Boundary breaking insights.

How are states (groups, agencies, etc.) really evaluating how well it's going?

6. What additional comments about the Hilton Head conference would you like to share?

Great atmosphere for learning

A good variety of meeting group size and topics. Well planned and organized. The fact that Wes, Francena, and John adapted to the needs of the group showed excellent understanding of the dynamics and willingness to adapt (although I think they were almost too accommodating).

You did a super job, as always! Thanks for being flexible w/the agenda. It really worked out OK.

Please make the purpose of the conference clear up front. As I stated in one session: had the purpose of the meeting been to stimulate thought for follow-up discussion in individual states, it would be okay to stop conversation short of closure. If the purpose is to find and share solutions, conversation should be allowed to continue. Either way is okay, but I believe there would be less tension if the whole group understood the purpose or intent of the leadership. This is also true for each break-out session. In some cases small groups could decide the purpose; in other cases leadership could decide. Overall — great conference — ya'll are wonderful people!!!

Thanks

Thank you for this extremely valuable conference!! It seems like the big factor now is keeping the implementation & communication close to the bas e. . . the community. If there is enough time & effort spreading it at grass roots level, perhaps we can prevent a disaster based on fears. The informal interactions & time to visit & explore ideas were valuable experiences also.

This was great networking — thanks for the opportunity to grow!

Excellent planning, keep us moving forward.

Thank you so much! Time of meeting was right for learning, collaboration, camaraderie, and relaxation. It was a wonderful experience. Good leaders! See you in July!

It was a worthwhile, positive experience. Thank you.

Please bring this group together again. It gave me an opportunity to do a great deal of planning for my state.

Wonderful setting — SERVE staff was super! — Accommodations were great.

Wonderful accommodations!

The conference was well planned and presented a broad view of what is happening with curriculum frameworks. This should be more widely disseminated. I would also like to see better research on each state's efforts with similarities emphasized.

Thanks — It was beautiful. I'd love to return. Perhaps — Giving "free time" after lunch (for an hour) to enjoy the sunshine would be helpful and reduce brain drain. Make dinner later, but not too late.

The conference overall was very helpful and informative but sufficient time was not always given for follow-up discussion.

I didn't expect to gain as much insight as I did. I'm still thinking and considering what people shared, what works and doesn't, etc.

It was well-planned and well-executed. Your staff and the staff of the other labs worked well to put on an excellent conference. Bravo!

Less is more — fewer sessions and fewer constraints within sessions.

What an opportunity to stretch, learn, grow, and hope contribute to a better world! Lots of people with their heads and hearts in the right place! *It was great to touch the Atlantic Ocean for the first time! *Also, I saw others doing the same! What it means . . . hmmm!

Appendix C

Suggestions for Facilitating Implementation of a CF: One Group's Perceptions

- Top-down activities:
  Offer and deliver professional development keyed to the frameworks.
  Disseminate information about framework goals and strategies.
  Disseminate models and strategies that facilitate framework implementation (e.g., changing school schedules to create more time for collegiality and sustained professional development).

- Bottom-up activities:
  Initiate long-term building and district professional development planning by teachers and staff, keyed to framework goals.
  Educate teachers with peers and make time for daily teamwork. (Professional development activities occur over time.)
  Support a safe environment for teachers to make mistakes as they struggle to understand and implement CF reforms. (Not everything works and makes sense at first.)

- Professional development (PD) should:
  re-energize educators
  model the reforms suggested in the frameworks
  include repeated follow-up PD activities
  provide repeated messages about framework goals
  respond to or resolve educators' questions as they emerge over time in their efforts to carry out and reflect on CF reforms
  provide a support network across buildings and districts
  involve schedule change to facilitate more collegiality and sustained professional development activity
  encourage and support teacher reflection about their efforts to change
  make sure that teachers understand the philosophy and basic goals of CF reform (take time for this)

- Policy at district and state level should be aligned.
  Frameworks must be aligned with local and state assessments, especially with high-stakes assessments.
  Preservice should be aligned with frameworks.
  Staff and teacher evaluation should be aligned with frameworks and should provide a supportive and safe risk-taking environment.

- Sustained public engagement will generate understanding of and widespread support for reforms among diverse key constituencies.

- Intermediaries need to be involved too–e.g., teacher educators and inservice providers.

- Some effective models for supporting change:
  funded intensive three-week summer institutes for teachers
  university-facilitated professional development schools
  sustained local professional development that provides ample time for frequent reflection, collegiality, and dialogue

Appendix D
Brainstorming: Barriers to and Facilitators for CF Implementation

Building and classroom group:

- tradition
- language
- school-based
- teaching attitude
- training
- transition
- policy
- time
- mandates
- law
- equity
- special-interest groups
- time to implement and institutionalize
- attitudes
  - administration
  - student
- assessment
- reflection
- political groups
- parents
- religious groups
- (money) resources
- dissemination
- staff development
- incentives
- resistance
- college or university admissions
- support
- professionalism
- communication
- understanding
- lack of long-term strategic plan

Intermediate group:

- the why of reform
- content knowledge
- politicians
- policies
- competition
- communication with the media
- department of education
- change
- local-level issues
- shifting priorities
- time
- teacher unions
- parents (taxpayers)
- high-stakes testing
- pedagogy
- inservicing to learn pedagogy
- building allies
- frameworks (interdisciplinary)
- accountability
- leadership
- lack of patience
- resources
- elementary (framework overload, terminology, structure, teachers as generalists)
- move beyond mandates (incentives involving capacity, changing systems)
- the belief or philosophy that all children can learn

State group:

- implementation (what is it?)
- political instability
  - inertia
  - direction changes
- communications
  - with profession
  - with public (parents)
- responsibility
- funding issues
- professional development
  - awareness
- articulating common vision for education
- understanding of the curriculum development process

Appendix E

Case Study Design: Curriculum Framework (CF) Implementation State Focus

Research Question

What processes are being used at the state level to implement state mathematics or science CFs?

Research Areas

Context

- What was the impetus for engaging in CF implementation (e.g., legislated mandates, Eisenhower grant, SSI funding)?
- Who has responsibility for the state's CF implementation? Is it shared with others? If so, how are these efforts coordinated?
- In what context is the state implementing a CF? What constraints, if any, are there (e.g., legislation, district/building policies)? What state-level conditions have facilitated or inhibited implementation of the CF (e.g., stability of leadership, continuity of plans)?
- Was there a precursor to the state's CF implementation effort? If so, what is the relationship of this effort to the previous one? How are they similar and different?
- To what extent is the implementation of the state's CF a grass-roots effort or a top-down effort?
- If the CF directly addresses implementation issues, which of the following components are included and to what degree of specificity: long-range planning, professional development, curriculum development, school-community relations, resources, evaluation?

Resources

- What resources are available for the implementation effort (e.g., people, printed materials, computer software, professional development support, programs, funds)? What form do they take, and how are they packaged and then made available?
- Who are the major players and how do they interact?
- How has diversity been considered in selecting a CF implementation team(s)?
- What is the level of CF experience of each of the people working on the state's implementation team(s)? Are these people from within the state? Have outside consultants been brought in to serve in or support this role? If so, how were they selected?
- If funding is available for implementation of your state's CF, are the funds committed for a portion of the implementation effort or all of it? What is the time frame during which these funds will be available? What is the status of funding for the current implementation effort?
- Is funding coming from multiple sources? If so, how is it being coordinated?
- What types of support or opposition has your state received from existing efforts or organizations (e.g., state professional organizations, NSTA, NCTM, Project 2061)? To what extent are the CF implementation efforts coordinated with efforts of these organizations?
- What is the extent to which the process of CF implementation in your state is being informed by the national reform efforts (e.g., emerging national instructional and assessment standards)?

Process

Approach

- What approaches are being used at the state level to implement the CF (e.g., pilot sites, demonstration sites, development of sample curriculum guides)?
- How did the state derive the implementation process? Was it modeled on other state-level CF implementation processes (from within the state or from other states)?
- What are the timeline and major milestones the state has for CF implementation?

Expectations

- What are the state's expectations or goals for the CF implementation efforts?
- What kind of participation does the state expect from intermediate- and school-level personnel? What kind of participation does it expect at its own level? How does the state obtain the participation levels expected?

Support

- How, with whom, and when does the state share information about the CF implementation efforts?
- What statewide groups have buy-in to the implementation effort? How was such buy-in achieved?
- Are there statewide groups that oppose implementing the CF? If so, what groups oppose the CF implementation and how is the state dealing with such opposition? What obstacles have been encountered in trying to gain the support of those groups in opposition?

Equity

- How is equity being assured in CF implementation?
- How is the state accommodating the differing needs of users in CF implementation (e.g., rural, urban, suburban; advantaged, disadvantaged; public, private; traditional, radically innovative; administrator, teacher, parent, business)?

Professional Development

- To what extent does professional development accompany implementation of the CF?
- What forms of professional development are called for, who are the audiences, when do they begin, and what are their durations?
- How will the state assure and support the intended long-term use of the CF (e.g., follow-up to professional development)?

Alignment/Integration

- Are there special problems or opportunities that arise at the state level in implementing integrated mathematics/science CFs as opposed to single-subject CFs?
- Are there special problems or opportunities that arise at the state level in implementing mathematics and science CFs in conjunction with other CFs?
- To what extent has the state aligned its CF implementation effort with other state

reform efforts (e.g., textbook adoption, assessment, certification)? What processes were followed in seeking such alignment and what conditions have facilitated or inhibited the alignment?

Evaluation

- How is implementation of the CF being monitored at the state level?
- How and with whom will the state share monitoring results, and how does it expect its audiences to use those results?
- What are the state-level mechanisms for CF revision and how do they function?

Case Study Design: Curriculum Framework (CF) Implementation Intermediate Focus

Research Question

What processes are being used at the intermediate level to implement state mathematics or science CFs?

Research Areas

Context

- What was the impetus for engaging the intermediate agency in the implementation of the state's CF (e.g., state mandate, pilot project, part of a funded proposal)?
- Who has responsibility for the intermediate level's CF implementation? Is it shared with others? If so, how are those efforts coordinated?
- In what context is the intermediate agency implementing the CF? What are the constraints, if any (e.g., legislation, district policy, community involvement)? What conditions facilitate or inhibit the implementation of the document (e.g., stability of leadership, continuity of plans)?
- Was there a precursor to your intermediate agency's involvement with the CF implementation effort? If so, what is the relationship of the precursor to this effort (e.g., previous CF, state competency standards)? How are they similar and different?
- To what extent is your intermediate agency's implementation a grass-roots effort or a top-down effort?
- How does the intermediate-level plan address CF implementation? Which of the following components are included and to what degree of specificity: long-range planning, professional development, curriculum development, school-community relations, resources, evaluation?

Resources

- What resources are available for assisting in the intermediate-level implementation effort (e.g., people, printed materials, computer software, professional development support, funds)? What form do they take and how are they packaged and then made available?

- Who are the major players at the intermediate level and how do they interact with each other in matters pertaining to the CF? With state personnel? With building administrators and classroom teachers? With local communities?
- How do people at the intermediate level ensure that diversity is considered in implementing CFs?
- What is the level of CF experience of each of the people assisting in the implementation effort? Are these people from within the intermediate region or have outside consultants been hired? If the latter, how were these consultants selected?
- How are funds used to implement CFs at the intermediate level? How are they apportioned? For what length of time are the funds committed?
- Does funding come from multiple sources? What sources? Does this affect the intermediate implementation effort? How?
- What types of organized support or opposition has your intermediate agency received in its CF implementation effort (e.g., parents, community, professional organizations)? How has this been helpful or detrimental?

Process

Approach

- What approaches are being used at the intermediate level to implement the CF (e.g., pilot sites, demonstration sites, development of sample curriculum guides)?
- How did the intermediate group derive the implementation process? Was it modeled on other intermediate-level CF implementation processes (from within the region or from other regions)?
- What are the timeline and major milestones the intermediate group has for CF implementation?

Expectations

- What are the intermediate group's expectations or goals for the CF implementation efforts?
- What kind of participation does the intermediate group expect from state- and school-level personnel? What kind of participation does it expect at its own level? How does the intermediate group obtain the participation level expected?

Support

- How, with whom, and when does the intermediate group share information about the CF implementation efforts?
- What regional groups have buy-in to the implementation effort? How was such buy-in achieved?
- Are there regional groups that oppose implementing the CF? If so, what groups oppose the CF implementation and how is the intermediate group dealing with such opposition? What obstacles have been encountered in trying to gain the support of those groups in opposition?

Equity

- How is equity being assured in the intermediate group's plan for CF implementation?
- How is the intermediate group accommodating the needs of different users in the CF implementation process (e.g., rural, urban, suburban; advantaged, disadvantaged;

public, private; traditional, radically innovative; administrator, teacher, parent, business)?

Professional Development

- To what extent does professional development accompany the intermediate group's implementation of the CF?
- What forms of professional development are called for, who are the audiences, when do they begin, and what are their durations?
- How will the intermediate group assure and support the intended long-term use of the CF (e.g., follow-up to professional development)?

Alignment/Integration

- Are there special problems or opportunities that arise at the intermediate level in implementing integrated mathematics/science CFs as opposed to single-subject CFs?
- Are there special problems or opportunities that arise at the intermediate level in implementing mathematics and science CFs in conjunction with other CFs?
- To what extent has the intermediate agency aligned its CF implementation efforts with other state and district reform efforts (e.g., textbook adoption, assessment, certification)? What processes were followed in seeking such alignment and what conditions facilitated or inhibited the alignment?
- How is the intermediate agency addressing cross-grade consistency in implementing the CF?

Evaluation

- How is implementation of the CF being monitored at the intermediate level?
- How and with whom will the intermediate group share monitoring results, and how does it expect its audiences to use those results?
- What are the intermediate-level mechanisms for CF revision and how do they function?

Case Study Design: Curriculum Framework (CF) Implementation Building or Classroom Focus

Research Question

What processes are being used at the school level to implement state mathematics or science CFs?

Research Areas

Context

- What was the impetus for engaging in mathematics or science curriculum implementation (e.g., state or intermediate mandate, pilot project, part of a funded proposal, site-based team decision)?
- Who has responsibility for the school's CF implementation? Is it shared with others? If so, how are those efforts coordinated?

- In what context is the school implementing a curriculum document? What intermediate, building, or community constraints, if any, are there (e.g., legislation, policy)? What conditions facilitate or inhibit the implementation of the document?
- Was there a precursor to the school's mathematics or science CF implementation effort (e.g., involvement in CF development effort, implementation of district curriculum guide, course outline)? If so, what is the relationship of the precursor to the previous one? How are they similar and different?
- To what extent is the school's CF implementation effort a grass-roots effort or a top-down effort?
- How does the school plan to implement the CF accommodate the following and to what degree of specificity: long-range planning, professional development, curriculum development, school-community relations, resources, evaluation?

Resources

- What resources are available to assist classroom teachers in translating CFs into classroom practice (e.g., people, printed materials, computer software, professional development opportunities, funds)? What form do they take and how are they packaged and then made available?
- Who are the major players of CF implementation in the building and how do they interact in matters pertaining to the CF?
- How do people in the building ensure that diversity is considered in implementing CFs?
- What is the level of CF experience of each person assisting in the implementation effort? Are these people from within the building or district or have outside consultants been brought in to assist in the effort?
- How are funds used to implement CFs at the classroom or building level? Are these funds committed for the short term or are there provisions for continuing support for the duration of the implementation effort, no matter how long it takes? How is the classroom affected by the district's or building's apportioning of the funds?
- Is funding coming from multiple sources? What sources? How do multiple funding sources affect the building or classroom's implementation effort?
- What types of organized support or opposition has the building or classroom received pertaining to its CF implementation effort (e.g., parents, community, professional organizations)? How has support been helpful? How has opposition been detrimental?
- To what degree does the building or classroom level align its CF implementation effort with national instructional and assessment standards?

Process

Approach

- What approaches are being used at the school level to implement the CF (e.g., pilot classroom, demonstration classroom, development of sample curricula)?
- How did the school derive the implementation process? Was it modeled on other school-level CF implementation processes (from within the school or from other schools)?
- What are the timeline and major milestones the school has for CF implementation?

Expectations

- What are the school's expectations or goals for the CF implementation efforts?

- What kind of participation does the school expect from state- and intermediate-level personnel? What kind of participation does it expect at its own level? How does the school obtain the participation levels expected?

Support

- How, with whom, and when does the school share information about the CF implementation efforts?
- What school groups have buy-in to the implementation effort? How was such buy-in achieved?
- Are there school groups that oppose implementing the CF? If so, what groups oppose the CF implementation and how is the school dealing with such opposition? What obstacles have been encountered in trying to gain the support of those groups in opposition?

Equity

- How is equity being assured in the school's plan for CF implementation?
- How is the school accommodating differing needs of users in CF implementation (e.g., advantaged, disadvantaged; traditional, radically innovative; administrator, teacher, parent, business)?

Professional Development

- To what extent does professional development accompany the school's implementation of the CF?
- What forms of professional development are called for, who are the audiences, when do they begin, and what are their durations?
- How will the school assure and support the intended long-term use of the CF (e.g., follow-up to professional development)?

Alignment/Integration

- Are there special problems or opportunities that arise at the school level in implementing integrated mathematics/science CFs as opposed to single-subject CFs?
- Are there special problems or opportunities that arise at the school level in implementing mathematics and science CFs in conjunction with other CFs?
- To what extent has the school aligned its CF implementation efforts with other state and district reform efforts (e.g., textbook adoption, assessment, certification)? What processes were followed in seeking such alignment and what conditions facilitated or inhibited the alignment?
- How is the school addressing cross-grade consistency in implementing the CF?

Evaluation

- How is implementation of the CF being monitored at the school level?
- How and with whom will the school share monitoring results, and how does it expect its audiences to use those results?
- What are the school-level mechanisms for CF revision and how do they function?

Appendix F

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